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| Agrilus sinuatus  | <b>426</b> / 166-68  |
| Agrius convolvuli   | <b>424</b> / 87  |
| Aleiodes alternator   |  |
| Amphipyra spp   | <b>426</b> / 169-72  |
| Anoplophora glabripennis  | ICN 28: 11-12:   |
|   | <b>425</b> / 162   |
| Aporia crataegi   | <b>426</b> / 188-90  |
| Anthocharis cardamines  | <b>422</b> / 20  |
| Anthophora  |  |
| Aricia agestis  |  |
|   | <b>423</b> / 61-64;  |
|   |  |
|   | ICN 30: 11   |
| Ascalabbus whomboidaus crotonois  | ICN 30: 11   |
| Ascalapbus rhomboideus cretensis  | <b>424</b> / 89  |
| Asilidae  | <b>424</b> / 89<br><b>427</b> / 230-32   |
|   | <b>424</b> / 89<br><b>427</b> / 230-32   |
| Asilidae  | <b>424</b> / 89<br><b>427</b> / 230-32   |
| Asilidae  | <b>424</b> / 89<br><b>427</b> / 230-32<br><i>ICN</i> <b>30</b> : 6;<br><i>ICN</i> <b>30</b> : 9-10   |
| Asilius crabroniformis  | <b>424</b> / 89<br><b>427</b> / 230-32<br><i>ICN</i> <b>30</b> : 6;<br><i>ICN</i> <b>30</b> : 9-10<br><i>ICN</i> <b>29</b> : 11  |
| Asilidae  | <b>424</b> / 89<br><b>427</b> / 230-32<br><i>ICN</i> <b>30</b> : 6;<br><i>ICN</i> <b>30</b> : 9-10<br><i>ICN</i> <b>29</b> : 11<br><i>ICN</i> <b>30</b> : 9  |
| Asilidae  | <b>424</b> / 89<br><b>427</b> / 230-32<br><i>ICN</i> <b>30</b> : 6;<br><i>ICN</i> <b>30</b> : 9-10<br><i>ICN</i> <b>29</b> : 11<br><i>ICN</i> <b>30</b> : 9<br><b>424</b> / 102                              |
| Asilidae Asilius crabroniformis  Atypus affinis Austropotamobius pallipes. Boloria selene selene. | <b>424</b> / 89<br><b>427</b> / 230-32<br><i>ICN</i> <b>30</b> : 6;<br><i>ICN</i> <b>30</b> : 9-10<br><i>ICN</i> <b>29</b> : 11<br><i>ICN</i> <b>30</b> : 9<br><b>424</b> / 102<br><i>ICN</i> <b>28</b> : 12 |
| Asilidae  | <b>424</b> / 89<br><b>427</b> / 230-32<br><i>ICN</i> <b>30</b> : 6;<br><i>ICN</i> <b>30</b> : 9-10<br><i>ICN</i> <b>29</b> : 11<br><i>ICN</i> <b>30</b> : 9<br><b>424</b> / 102<br><i>ICN</i> <b>28</b> : 12 |

| Danaus chrysippus           | <b>423</b> / 76-77   |
|-----------------------------|----------------------|
| Dolichovespula media        | ICN 30: 10           |
| D. saxonica                 | ICN 30: 10           |
| Dypterygia scabriuscula     | <b>422</b> / 6       |
| Eurodryas aurinia           | ICN 29: 8-9          |
| Formica exsecta             | <b>427</b> / 215-20  |
| Gelis areator               | <b>423</b> / 43-46   |
| Greta oto                   | <b>426</b> / 183-85  |
| Habrophlebia fusca          | <b>425</b> / 146     |
| Heliothis armigera          | <b>422</b> / 3-5     |
| Hepialus humuli humuli      | <b>426</b> / 185     |
| Hirudo medicinalis          | ICN 29: 11-2;        |
|                             | ICN 30: 8            |
| Hyloicus pinastri           | <b>426</b> / 173-76, |
|                             | 176                  |
| Liquidambar styraciflua [B] | <b>423</b> / 47-50   |
| Lucanus cervus              | <b>425</b> / 141-42  |
| Maculinea arion             | <b>426</b> / 190     |
| Meloe proscarabaeus         | <b>426</b> / 181-82  |
| Metoecus paradoxus          | <b>427</b> / 229     |
| Myrmica saevissima          | <b>423</b> / 79-80   |
| Myxas glutinosa             | ICN 28: 9-10         |
| Nelima sylvatica            | ICN 29: 11           |
| Oberea oculata              | ICN <b>30</b> : 6    |
| Orgyia antiqua              | <b>423</b> / 43-46   |
| Pseudonodonta complanata    | ICN 29: 10           |
| Saturnia pyri               | <b>423</b> / 46      |
| Stenobothrys lineatus       | ICN 30: 9            |
| Theridion grallator         | ICN 29: 10-11        |
| Vertigo lilljeborgi         | ICN <b>30</b> : 6    |
| V moulingiana               | TCN 20 11            |



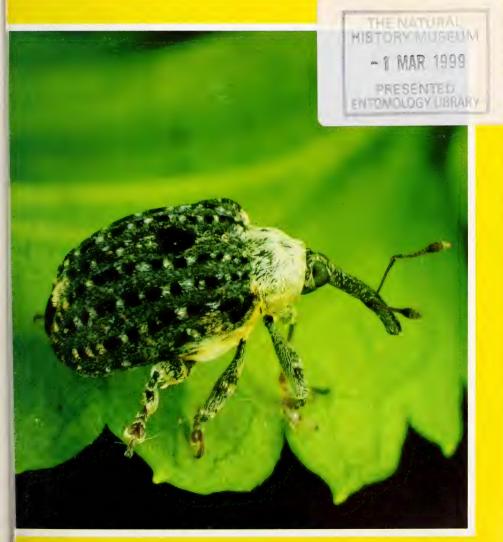


# Bülletin

of the Amateur Entomologists' Society

Volume 58 • Number 422

February 1999





Founded in 1935

## The AES • P.O. Box 8774 • London • SW7 5ZG



http://www.theaes.org

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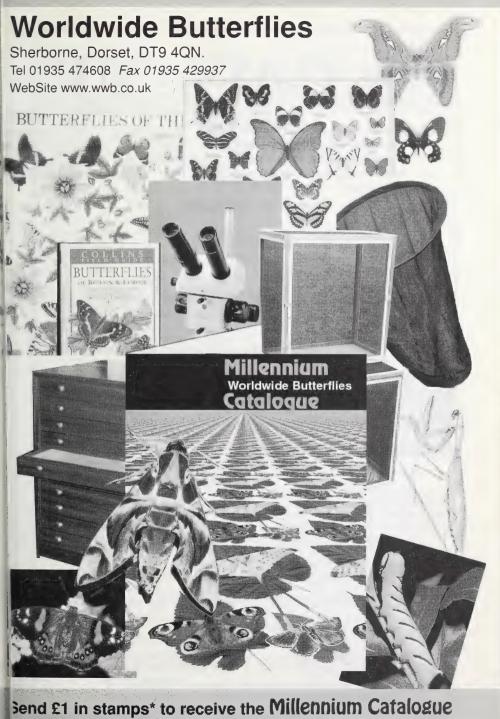
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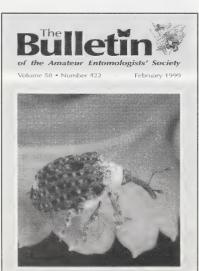
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# BUG CLUB

Do you want to cuddle a Cockroach, stroke a Stick Insect or hug a Harvestman?

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As the junior section of the AES we are devoted to promoting invertebrates to the younger generation who, afterall, will be the entomologists of tomorrow! You can help us in a number of ways, for example: by joining the Bug Club yourself, getting someone else to join the Bug Club, promoting the Bug Club and AES to your local school/Scout or Guide Group etc, running a Bug Club event or writing an article for our exciting newsletter. If you can do anything to help then please write to us: AES Bug Club, PO Box 8774, London, SW7 5ZG. Membership details can be found in the front of this Bulletin.



Editor: Wayne Jarvis BSc

The cover of this issue of the *Bulletin* features *Cionus scrophulariae*, a member of the Curculionidae is a very distinctively coloured weevil which measures 3-5mm in length. Its typical feature is the two large, black, velvety spots on the elytra, which are bordered by groups of white scales arranged densely on the posterior margin of the anterior spot and on the anterior margin of the posterior spot.

The species occurs in clearings, on hillsides and beside forest tracks, wherever figwort, the main food plant of the beetles and larvae, grows. The imagoes are abundant from early spring into the summer. Their colouring makes the beetles virtually invisible on the dark figwort, but the slimecovered larvae make their presence known by the holes they bite in the leaves. They do not pupate in the soil, but make a cocoon, which closely resembles the figwort flower or seed, on the plant. C. scrophulariae is distributed over a considerable part of Europe and eastwards as far as the Caucasus. It also lives in Asia Minor and has been carried to North America.

Photo: Nick Holford.

## Bulletin of the Amateur Entomologists' Society

Volume 58 • Number 422

February 1999

## **Data Protection Act**

by Nick Holford, Registrar

5 Conifers Close, Horsham, West Sussex RH12 4QH E-mail: nick@fivecon.force9.co.uk THE NATURAL HISTORY MUSEUM

-1 MAR 1999

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In order to fulfil the requirements of this act I must advise members of the details held on computer database and the use made of them.

Currently the information we hold comprises – name, address, telephone number, e-mail address, date of birth, interests, payments made, and membership category. Additional information is held regarding mailing details. If any member objects to these details being held, would they please get in touch with me.

The information is used for the following purposes:-

- To prepare mailing labels for the *Bulletin* and *Bug Club Magazine* and labels for other mailings as required.
- For the preparation of statistics for use by the Council.
- The publication of Membership Lists. These will only include details of name, address, interests, and, in the case of Junior Members, the Membership Class. Please note that telephone numbers and e-mail address are ONLY passed on to Council and Committee members when a specific request is made. Such details are not passed to other members. Individual members may request specific lists, such as names and addresses of members in a specific area, with or without interests included. A minimum charge of £1.50 is made to cover the additional costs of stationery and postage involved.

## AES Membership List

It is now possible to produce a Membership List whenever one is required and it is hoped to produce one in 1999, providing adequate funds are available (production costs in the region of £2,000). It should include an alphabetical list of names and addresses. It is should also include a list of members' names under specific interests, and members' names in individual countries and counties. (It is for the latter reason that county name is always included in the address, despite it not being



essential in most cases). The restriction to only three named interests is to make the interest lists manageable, since these will help members communicate with others of similar main interest areas.

## Change of Address

The mailing labels are produced a month in advance in order to notify the printer how many of each publication need to be printed and to allow sufficient time for the envelopes to be prepared. This can mean that if I am notified of the change of address after the mailing labels are produced, then it will go to the previous address. It is therefore in members' interests to notify me as to the new address, and the date for which it becomes effective, as soon as possible after the details are known to the member. Members may notify me directly to my home address, if they wish and I can also be contacted by e-mail. In notifying a change of address, please be certain to include your membership number, which is printed after the name on the mailing label. This makes finding the record much easier. On one occasion I had a member notify me of change of name and of address but neither the previous name nor the previous address were given. I eventually managed to trace the record by using the member's initials, though this did take quite a time.

## Payment by cheque

When paying by cheque, if the members family name is different from that on the cheque, please write the member's name on the back as this helps considerably when checking that payments have been entered correctly. It would be helpful if the membership number was written on the back as a matter of course. PLEASE do not staple cheques to the form, these require a considerable amount of time to remove, and when dealing with about 1400 cheques in the space of two months, any saving in time is a great boon!





## The carnivorous larvae of *Heliothis armigera* (Lepidoptera: Noctuidae)

by Etsuko Hayashi

2 Corniche des Roches Roses, Aiguebelle, 83980 Le Lavandou, France.

In the town of Le Lavandou in southern France, I generally breed Lepidoptera larvae from mid-June to mid-September. However, during 1997 there was an excessive drought between mid-August and mid-October, resulting in very little wild grass or foliage. This resulted in it being exceedingly difficult to find any larvae or ova of those butterflies associated with the worst hit species.

Papilio machaon (Papilionidae) flew for a while around asparagus (Asparagus aculeatus) the leaves of which are very similar to those of wild fennel (Foeniculum vulgare) which is commonly found growing along roadsides. Pieris brassicae (Pieridae) also seemed to be having trouble finding the wild cruciferous plants on which its larvae feed, along with three or four other Pierid species. Not having found any suitable plants on which to lay their eggs, they began to lay in the vegetable gardens.

In the gardens *P. machaon* began to oviposit on small newly grown fennel, and the Pierids were finding the freshly planted out cabbages on which to lay their eggs. I collected eggs from both species and kept them together in the same cage at home. My purpose for my collection was merely to rear the larvae until they grew into pupae.

One day, on collecting wild fennel to feed my *machaon* larvae, I noticed some tiny, thin, black young larvae that I was unable to identify. I placed the larvae in the same container that was sheltering the other two species when I returned home as they seemed to be feeding on the same foodplant as the *machaons*.

Having reared the caterpillars on further, it became apparent that my unidentified species was that of *Heliothis armigera* (Noctuidae). I had come across this species in November 1996 hidden on a marigold (*Calendula arvensis*) which had been picked to feed to other larvae. I separated it and fed it on marigold until it was fully grown in December (Plate 99A). The larva then moved underground (Fig. 1) where it pupated (Fig. 2). I was pleased in July 1997 when the adult moth emerged (Plate 99B). I showed little further interest in the species other than to photograph the shift of colour of the larvae from black (Plate 99C) to brownish-green (Plate 99D) as they developed and continued to rear the species alongside *machaon* as I had always done.



Early on the morning of 27th October 1997, I observed a dry head-skin of a *machaon* larva hanging from a fennel stem. This dry head-skin appeared to be completely different from the usual shed skin and I was unable to understand what had happened. However, evidence of the osmeterium showed a danger to which the *machaon* larvae were exposed.



Fig. 1. Larva of Heliothis armigera moves underground to pupate.

On the same morning, in the same container, a tiny *machaon* larva moulted at around midday. By 1pm, I could easily ascertain that this larva had been firmly grabbed from behind and bitten by the *H. armigera* larva. The *machaon* larva struggled to free itself, but despite its defence using its osmeterium, was completely eaten (Plate 99E). I removed the larva from the container and kept it isolated.

On 29th October, I placed in the *armigera* container, a live *P. brassicae* larva, which had been parasitised by larvae of the parasitic wasp *Apanteles glomeratus*. The *brassicae* larva was grasped firmly and eaten by the *armigera* larva with great speed (Plate 99F). This process was repeated the following day on the introduction of a similar *brassicae* caterpillar into the *armigera* container.

Over the next couple of days I fed the larva on small pieces of veal and lamb. These were eaten greedily if not somewhat slower than it had devoured the larvae. I fed the larva on fennel only on 1st and 2nd November, fearing that too much meat may be harmful to the caterpillar. On the 3rd November, the larva had disappeared, I presume having buried itself in the soil to pupate.



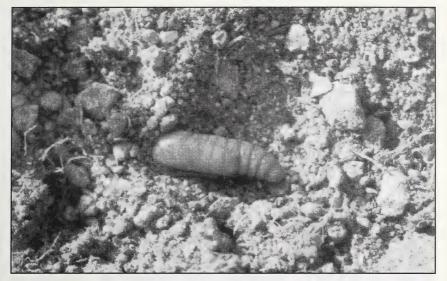


Fig. 2. Pupa of Heliothis armigera.

Looking at my notes from 1996, I noticed that the larva had looked for a place to pupate nine days after the change of colour had occurred from black to green. Similarly, in 1997 this was the case.

I have noticed other publications detailing carnivorous larvae. Some species of Lycaenidae larvae, which live for periods of their life cycle in symbiosis with ants in their nest and nourish themselves on the ants' ova and larvae. A species of *Eupitecia* (Geometridae) eats flies in Hawaii. Larvae of some species of *Laetilia* eat hemipterans and closer to home, the larvae of *Anthocharis cardamines* (Pieridae) are cannibalistic, eating smaller larvae of their own kind.

I have however, never heard of any notes on the carnivorous nature of *H. armigera*. I would be very interested to hear from any member who has had similar observations of this or any other species.

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## An uncommon Staffordshire moth at sugar

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke on Trent, Staffordshire ST3 7AY.

On the evening of 27th September 1997 in my garden at Meir, Richard and Derek Heath and myself were sugaring for moths when a Birds wing (*Dypterygia scabriuscula* L.) appeared alongside an Autumnal rustic (*Paradiarsia glareosa glareosa* Esper). This is the first Birds wing ever to be recorded in the Meir area. It is also very uncommon in the county as a whole. It has previously been recorded from Forton and Aqualate b the Rev. E.S. Lewis in 1935-36 and from a garden at Madeley in 1945 by H.W. Daltry FRES. During 1977 it became quite frequent with records from Chartley Moss, Tittensor, Blythe Bridge Mill, Alvecote and Penkridge. Since then it has become quite scarce again – 1945 and 1977 have been the most frequent years for this species in the county.

## A day at Wyrley Common, Staffordshire

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke on Trent, Staffordshire ST3 7AY.

On 30th July 1997 in the company of Charles Byatt and Derek Heath, I visited Wyrley Common, Staffordshire. We arrived around 11.30am, the weather becoming quite warm and sunny after a cloudy start.

We started beating the bushes, and were not disappointed. We recorded single specimens of the Treble lines (*Charanyca trigrammica* Hufn.), the Treble bar (*Aplocera plagiata mendica* Linn.), the Ingrailed clay (*Diarsia mendica* Fab.) and the Shuttle-shaped dart (*Agrotis puta puta* Hübn.). The most notable insects here were the Scorpion flies (*Panorpa communis*) (mainly males with their distinctive tails, they seemed to prefer the more shady parts of the area), a number of Peacocks (*Inachis io* Linn.) and Gatekeeper (*Pyronia tithonus*) butterflies, we saw the Common darter (*Sympetrum striolatum*). Brown hawker (*Aeshna grandis*) and Southern hawker (*A. cyanea*) dragonflies and the Emerald damselfly (*Lestes sponsa*). We had hoped to find the Small blue (*Cupido minimus*) and the Six-belted clearwing (*Bembecia scopigera* Scop.) which we had recorded here in the past.

On the way home we dropped in at Brownhills Common, Staffs. where we saw a single example of the beautiful Yellow underwing (*Anarta myrtilli*, Linn.), and we also found larvae of the Pebble prominent (*Eligmodonta ziczac* Linn.) – a perfect end to the day!



## Carded Insect Specimens. A simple solution to some problems encountered with this method of mounting

by Harry T. Eales

11 Ennerdale Terrace, Low Westwood, County Durham NE17 7PN.

Carding of insect specimens *i.e.* the mounting of a specimen on a small piece of card, has been common practice for nearly 200 years. This method of mounting is traditionally used by the collectors of Coleoptera, Heteroptera and some other insect orders. Once the specimen is mounted, the card is held in position in the cabinet or storebox by a pin placed near the edge of the card mount to the rear of the specimen.

This method of mounting does however, have its drawbacks. If the card is set high enough on the pin to allow a data label to be placed low enough to be read, then there is a distinct tendency for the card to sag, or worse, swivel on the pin. The first detracts from the appearance of the collection, the second is likely to cause damage to any other specimens nearby, when the drawer or storebox is moved. Both these faults are caused by the very small area of grip or friction between the pin and the card. To overcome these problems, two methods seem to have been adopted by collectors over the years.

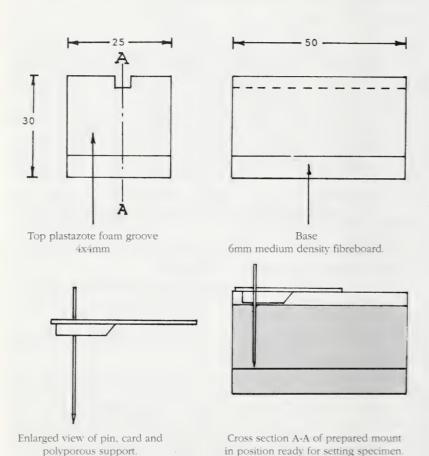
The first is to place pins on either side of the card mount to stop the swivel movement, which is unsightly. The second is to mount the card so low on the pin that the card is pressed against the bottom of the drawer or storebox thus preventing any sagging, but eliminating any viewing of the data label without first removing the specimen from the drawer, with the risk of causing damage.

To overcome these basic problems I have found a simple, effective and economic solution, which corrects both faults. This is simply to glue a short length of ½ (3mm) square polyporous strip to the underside of the card. This acts not only as a brace to the card to stop any sagging, but provides a large area of gripping surface for the pin (see Fig. 1). The length of the polyporous strip should be between a third to half the length of the card size being used. The addition of the polyporous strip adds 12.5 times the area of grip available to the mounting pin, compared to the grip available from the 0.01" (0.25mm) thick Bristol Board alone.

My preference is to use die cut Bristol Board cards for the final mounting of specimens. These are available commercially, and are inexpensive. Staying with three or four standard sizes will improve the appearance of any collection.



Fig. 1. Drawing of setting board for holding pre-prepared pinned cards with polyporous support. All dimensions in mm.



The use of plastazote for the construction of this setting board allows the pin to be driven in to the required depth with ease. The card rests on the upper surface of the board and the polyporous in the groove. The height of the board is designed not only to accept a long pin, but also the make the manipulation of the specimen a comfortable procedure.



Polyporous (the bracket fungus which grows on dead or dying Birch trees) is not, as far as I am aware, available commercially, but is easy to find in any old Birch wood. It is simple to prepare, and is of course, free of charge. I have tried to use the modern, man-made substitute, sold under the name of Nu-Poly, but find that it lacks both the grip and strength of natural polyporous.

After experimenting with various adhesives, I have found that the best results are obtained using Copydex. This is easy to use, dries quickly and leaves no stain mark to penetrate to the upper surface of the card, and is solvent free.

Cards may be prepared in batches ready for use. The method I have found best, is to first run the pin through the card at the appropriate place to the required height. Then push the pin through the polyporous strip with the adhesive and run the pin through the strip until contact is made with the card. This will keep the adhesive off your fingers. The prepared pinned card is then set aside to dry for half an hour. This method is more effective than pre-gluing the two pieces together before pinning, as there is a tendency to crush the polyporous strip when forcing the pin through the stiff card.

When needed, the prepared card is placed on the end of a special setting board grooved to take the section of polyporous (see Fig. 1). This stabilises the card and stops it moving about when setting or remounting specimens.

To provide additional uniformity of presentation, I use a standard size stainless steel headless pin 30mm x 0.917" diam. for all mounts. This is inserted through the card and polyporous strip, as described above, all cards are set to a standard height of 20mm by using a (homemade or commercial) pinning stage. Setting the card at this height leaves ample room beneath for one or even two data labels.

Always use stainless steel pins, the old style black lacquered or silver plated pins have a common fault, in that they tend to corrode where they penetrate the paper lining of the cabinet drawer or storebox. The use of stainless steel pins will prevent such corrosion taking place.

The results obtained, using these reinforced card mounts are well worth the slight additional effort. Why not try it, and see for yourself.

## DIARY DATE

10th May – Wimbledon Beekeepers Association Bees and Other Insects in your garden – a talk by Andrew Halstead Morden Hall Medical Centre, 19:30h, admission free I: Norman Chapman 0181 640 0030



## Seasonal Polyphenism in Lepidoptera

by C. Willmot (8911)

10 Vale Grove, London W3.

Seasonal polyphenism has been defined as ". . . an annually repeating pattern of changing phenotypic ratios under some kind of control by seasonally recurring environmental factor(s)." (Shapiro, 1976.)

Seasonal polyphenic forms are at their most diverse in the tropics where environmental conditions differ strongly between wet and dry seasons, and where more broods per year are possible.

Brakefield and Larsen (1984) proposed that the ratios of forms of species found in each season are an adaptive shift between predator avoidance and crypsis. In wet seasons, polyphenic species have more active individuals with strong wing markings, particularly eye-spots. Dry season forms tend to show fewer markings and to be more sedentary, showing typically cryptic morphological and behaviour patterns.

During wet periods, predators are likely to have an abundance of food, and deflection techniques such as eye-spots may aid survival. In contrast, during dry seasons predators will search more carefully for food, and cryptically patterned individuals may show higher survival rates.

The transition from wet season forms with their emphasis on active predator avoidance to the dry season cryptic forms in *Bicyclus* spp. has been found to coincide with decreasing temperature and humidity (Brakefield and Reitsma, 1991). However, McLeod (1989) found relative humidity to be unimportant as a controlling factor between the two forms of *Precis octavia*. In this species, it was temperature that determined whether the imago would be *P. octavia* f. *natalensis* (dry season) or f. *sesamus* (wet season).

In areas where seasonality is less extreme, intermediate forms of the butterfly *Melanitis leda* (Satyrinae) were found to exist in wild populations. Temperatures two to three weeks prior to eclosion appeared to be a cue for the induction of wet/dry season forms. Meteorological data indicated that temperature was a reliable predictor of rainfall (Brakefield, 1987).

As shown by Brakefield (1987), a lack of extreme seasonality does not preclude the existence of seasonal polyphenism. In temperate regions it is found to exist between spring and summer populations of bi- or multi-voltine species (Windig *et al.* 1994).



*Pararge aegeria* occurs across Europe and into western Asia and northern Africa (Brakefield and Shreeve in Dennis, 1992). In Britain it occurs primarily across the southern and western regions, in Ireland and in north-west Scotland (Maitland Emmet and Heath, 1989) although records from the 19<sup>th</sup> century indicate that its past range was practically continuous over the entire British Isles (Downes, 1948).

The Speckled wood appears to be unique amongst British butterflies in that it can over-winter as either larva or pupa (Ford, 1953). This twin over-wintering strategy leads to the appearance of three main emergence peaks (Ford, 1953; Robertson, 1980a).

Although phenotypic variation in the Speckled wood is not great, its presence has been noted by several workers (see Packer, 1984; Robertson, 1980b) and linked to seasonality.

The first adults to emerge do so in April and early May. These individuals over-wintered as diapausing pupae. Those that over-wintered as larvae pupate in early spring to emerge in June. The progeny of the first brood emerge in August.

Robertson (1990b) describes the three broods as differing in the following manner:

**Brood 1** (from over-wintered pupae) have clear, well developed cream markings.

**Brood 2** (From over-wintered larvae) are larger in size but have smaller markings.

**Brood 3** (progeny of Brood 1) are the smallest in size and tend to have greatly reduced markings.

Packer's (1984) descriptions agree with those of Robertson, but contain an additional section on the upper- and under-hindwing spot patterns. In his view insects on the wing early in the season tend to have three upper- and five under-hindwing spots. These data are possibly contradictory to those of Brakefield and Larsen (1984) as the animals are likely to be more active due to higher ambient temperatures which may lead to a greater need for active predator avoidance tactics.

Results obtained from experiments at Leeds University in 1995-6 indicate that it is larval perception of changing daylength that controls the expression of the adult phenotype, and that the resultant changes are probably an indication of different resource allocations between broods.

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#### Mothmen

Stealing thru' darkened night They sugar ancient trees Cloud cover, no moon in sight Just summer's scented breeze.

Creeping into silent wood
Stealth is on their side
Could it be that something good
Becomes a treasured prize?

Pronuba he abounds tonight Monoglypha in good number Orange eyes glint in their light Maura rouses from her slumber.

They're looking for a rarity Not just any old *Noctua* Something of a scarcity Feasting at their lure.

Libatrix now he's alright
Pyramidea looks a meanie
But what they really want tonight
Is to box a Giant fraxini!

Gareth Robinson



## **Bag of Delight – Close Encounters with the Purple emperor**

by Ashley Whitlock (9077)

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There are many butterflies in this world that hold a true fascination, whether it be their life cycle, their habitat, or their rarity, but for me the Purple emperor (*Apatura iris*) holds all these qualities. With England being blessed with many woodlands, especially where I live in southern England in the county of Hampshire, in which over the last ten years I have recorded this species and here follows an account of a particular year – 1997 in which I was lucky to see it at close quarters five times.

There is a lot of history associated with this splendid butterfly, I will not go into specific details about it as it has all been covered by Ken Willmott and other leading lepidopterists. It was first described in 1704 by a Mr Dale, and was called the Mr Dale's purple eye. It was first captured in the county of Essex in 1695 and from that year the fascination for this butterfly has never waned. It has been described in many books and publications, none more than the excellent reports in the books *The notes and views of the Purple emperor* by Heslop, Hyde and Stockley, who were leading lepidopterists in the post-war years studying this butterfly in Wiltshire and other leading counties. It has not been seen on the Isle of Wight since 1890, as summarised in the book *The Butterflies of Hampshire and the Isle of Wight* by B. Goater. Having visited the island many times in the last decade, there are many woods there that could easily support colonies of this butterfly, but sadly it does seem to be absent.

My experience of seeing this butterfly is probably the same as most other recorders, usually in a wood in the early hours of the morning, where they can be seen through binoculars flying high over the tree tops or at rest on the edge of a leaf on their favourite perch on their master tree. A male usually starts to descend towards the ground between the hours of 10.30am and midday, in my experiences I have seen the butterfly on the ground well after the so-called cut-off time of midday. It is very easy to miss them on the ground, as the beautiful patterns on the underside of the wings really blend in with the surroundings, and I have practically trod on them, not knowing they were there. It is very advisable to sweep the ground with your eyes, and investigate all the rabbit droppings and other waste products left on the ground! In one wood I visit regularly a whole host of things are put out to attract them down. These include banana skins, large grapefruit skins, dead rabbits, large puddles of water, especially when there is a hot



summer they seem to be attracted to shiny objects, like car windscreens, glass, and one time a lady's dress caught the attentions of a male, although the lady in question screamed, and it promptly took off, never to be seen again! Made me wonder what she went into the wood for?

Over the last decade it has had many peaks and troughs mainly due to the weather in the spring months. The earliest I have recorded it was on mid-summer's day, but in the long hot summer days if the weather is very good it tends to burn itself out, and is only rarely seen in the early part of August, and these are normally females searching for a sallow to lay their eggs.

The best time to see this species is about mid-July, and 1997 was no exception. I visited eight woods in all four corners of Hampshire and some in Surrey as at some sites you are almost guaranteed to see them. I cannot say this of sites in Hampshire. One wood which used to have good numbers has now become very overgrown and the sallows have become choked, and another prime site had many sallows ripped out when contractors moved in to extract prime timber for logging. There are also a lot of industrial units being built along with many houses but human pressure does not seem to affect this species too much, except when its foodplant is disturbed. This species can also be found in the commuter belt of Surrey and Sussex – only a short distance from the capital. At one site I saw the Emperor on the ground every day for a week, but after logging I have not sighted it once! Perhaps nature will make repairs, and the sallow is a fast growing tree, so hopefully it will return, as the Emperor is not so restricted to prime woodland these days (Plate 99G).

During 1997 I recorded one on chalk downland, just west of Winchester. At another site an Emperor was attracted to my camera bag which over the years has been put down on many different types of ground and picked up all sorts of mineral deposits and this was the fascination with this butterfly which I had in my company for up to two hours. I think it was so content I could have easily taken it home, it didn't flinch when I got up and started walking about with it, its beautiful yellow proboscis darting about the rough blue canvas, it was having a right old feast! It was so content I could stroke it giving me many glimpses of its lovely "wing waving" and showing me its beautiful purple-blue colouring on its wings. In fact I find the colouring to be more of a blue tinge especially on a newly hatched specimen. The bag of delight was forced to alight back in the area where I picked it up in the wood, as these insects have their own territories, and I had to depart as it was getting far too hot.

Other encounters have been where there has been a female darting around, in a criss-cross pattern, and a large male being seen through



the binoculars, being mobbed by its smaller cousins – the Purple hairstreak (*Quercusia quercus*) after invading their territory in the crown of an ash tree. Hopefully Hampshire can still enjoy this delightful species well into the next century, but habitat loss and management of some of the larger woods will be a big factor, and not forgetting global warming which could still have an adverse effect.

Trying to do a sensus of the species is no mean feat. I would suggest the species is holding its own with stable populations in the larger oak woods dotted around the counties of Hampshire, Wiltshire, Surrey, Sussex and to a lesser degree Berkshire, Oxfordshire and Buckinghamshire within the boundaries of the home counties. Close studies of this butterfly have been carried out in a large tract of woods in Surrey and a study of the habits of woodland species was recorded in a large wood near Basingstoke for the TV series *The Living Isles* – a highrise was used to see over the top of the largest oak trees, and it made some astounding discoveries. The crowns were covered in Purple hairstreaks, White admirals (*Ladoga camilla*) and of course the Purple emperor so sightings of these species on the ground and at eye level are only a very small proportion of what can be seen high up in the canopy.

The Emperors I have seen have tended to use the following trees as a "master": douglas fir, beech, ash and lastly the oak, although not necessarily the largest. I've found they use a tree which overlooks their domain, where the tracks and paths and woodland undulate, and it normally stands on the cross path of a ride. So if you find yourself in a large wood near Romsey, just parking the car, and there are several people staring skywards, you can be pretty sure they are looking at, or have spotted that most prized of butterflies in this country, the Purple emperor.

#### A London LNR

by Tony Sargeant (9981)

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Hillingdon Natural History Society wish to improve the entomological knowledge of an area that is the site of a proposed Local Nature Reserve to the West of London.

The Society would welcome any assistance in 10 km grid square TQ08. All collecting to adhere to JCCBI, A Code for Insect Collecting. Part of the site will not be collected from as it is designated as SSSI.

Also any records for the above Grid Square will be appreciated.



## Book Reviews

Aquatic insects of north Europe: a taxonomic handbook, Volume 2: Odonata-Diptera

Edited by Anders Nilsson. A4 pp+40 which includes some 2000 figures on 190 pages. ISBN 87-88757-15-3. Apollo Books, Kirkeby Sands, DK-5771 Stenstrup, Denmark 1997. Price DK550.00 plus postage (approx. £60.)

This is the second and concluding volume of this major work on aquatic insects and, as was to be expected, the bulk of it is taken up with very numerous Diptera while the more popular and far fewer Odonata take up only 53 pages, the authors being Ulf Norling and Goran Sahlen. The major part of this chapter is taken up with extensive keys to the nymphal stages and there is no doubt that this forms the most useful part of the work and updates A.E. Gardner's 1954 key (Entomologist's Gazette 5: 193-213) and is far more detailed than the 1997 key by Steve Brooks (Field guide to the dragonflies & damselflies of Great Britain & Ireland) with which it could be used in conjunction. although of course it must be used with the premise that not all British species are included and about an equal number of continental species not occurring here (ratio 52 to 59 with 38 in common), which just turn up here due to climate changes. No less than 312 illustrations accompany this section. There then follows a very short key to adults. with no detailed descriptions, but then one must bear in mind that there are now several very well-illustrated and detailed books on the adults, most with coloured illustrations and to have repeated that information here would have been superfluous.

While the keys run down to individuals for the Odonata and some Diptera genera such as the much studied Culicidae, for most groups it has only been possible to key to genera, but this is done both for larvae, pupae and adults. Useful biological information is given on various aspects such as habitats, collecting and rearing methods as well as the present state, or lack, of knowledge which is a good guide for those



looking to make some new discoveries. The various groups are dealt with by authors who are specialists in their respective families and while this multi-author approach leads to some unevenness in treatment, this is as much due to lack of present knowledge as presentation and the editor must be congratulated in pulling it all together and presenting this Danish book in English from authors from practically every country in Europe, only one of whom I note would have English as his native tongue. As in Volume 1 there is extensive biological information to be gleaned from these pages and their extensive references given show the research the authors have taken with their contributions, not to mention all the laborious work that must have gone into the preparation of the many illustrations. This volume is harmonious with the first volume in not using our conventional *Italics* in the references and the index is a little confusing until you get used to it.

This, together with Volume 1 (Reviewed in Bulletin 56:163-165) is a book that is needed by all who are interested in aquatic insects. It is perhaps a pity that the dragonflies are placed here with the far more numerous flies, for that makes it an expensive volume for the dedicated odonatist who of course is more likely to be interested in related Orders dealt with in Volume 1 such as the Megaloptera, Plecoptera and Orders with similar nymphal stages rather than in the very different and far more difficult to study Diptera. Nevertheless the accounts and keys of them here may well stir an interest and both volumes are of course essential for the generalist in the study of aquatic life and this volume in particular for the dedicated dipterist. This is not, however, a work for the fainthearted or novice and some experience in the subject is advisable before tackling the keys although the other information given is readily understandable and gives an excellent introduction to the general biology of the Diptera. In a work of this size and complexity it is likely that a few *lapsus calumni* may have crept in, but if so, making some random checks. I did not spot them.

A saving of DK100 can be made by ordering both volumes together at DK900, plus the inevitable postage, and I note that they are available in England from both Pemberley Books and Lydie Rigout which would be far less trouble than ordering direct from the Publisher whose books are of a consistently high standard.

Brian Gardiner (225)







## Images from nature: drawings and paintings from the library of the Natural History Museum

Introduced by Christopher Mills Sq. 8vo.pp112. pbk ISBN 563 09029 1. The Natural History Museum 1998. Price £12.95

While it is I think well-known that the NHM holds many of the older originals of natural history drawings and paintings, it came as a surprise to me to find a number of recent ones here, notably those of Brian Hargreaves which were published in the Field guides to the butterflies of Britain & Europe and of the West Indies; five illustrations in all including his very recent 1997 one of the new Wildlife Garden in the Museum. Also illustrated are two of the marvellous Diptera illustrations of Terzi whose work on this order has never, to my mind, been bettered. Also shown are Walter Bates' water-colour and pencil manuscript notes of beetles from his Amazon expedition of 1851. Although I note a few other individual insects scattered about, the bulk of this book is of other natural history subjects, covering a wide spectrum, but it does give a good impression of some of the very extensive holdings (some half million!) to be found in the Museum, most of which can be studied by bona fide applicants.

Brian Gardiner (225)



## The Wet Grassland Guide: Managing floodplain and coastal wet grassland for wildlife

RSPB, EN & ITE. 1997

Wet grassland as discussed in this book are: semi-natural floodplain grassland; washland; water meadows; wet grassland with intensive water level management on drained soils and lakeside wet grassland. This book does not include so called marshland, i.e. those wetland habitats dominated by reed. There are some 1,000 nationally notable species of invertebrates recorded from wet grassland and although a large number of these are also found on other wetland types, this does not detract from their value as an important invertebrate habitat.

The book is a practical conservation guide to wet grasslands and I hope that it will be used as such by the local councils, Wildlife Trusts and other organisations that have the responsibility for managing such sites. It is packed full of readily accessible advice on the management,



including proven case studies from around Britain. The habitat requirements for invertebrates e.g. beetles (Heteroceridae and Carabidae) and flies (Ephydriidae and Muscidae). The section on survey techniques for invertebrates was, in my opinion (and being an entomologist a biased one) understated and the choice of techniques a little restricted. The key references given at the end of this chapter were too short, missing a number of very important publications. However, despite this, the invertebrates are given reasonable coverage and it was encouraging to see the use of the term "monitoring" in relation to insects.

When one hears the name RSPB, one imagines birds and binoculars. Fortunately they now appear to be taking a lead in promoting the conservation of invertebrates which as an entomologist I applaud them for. The use of bullet points, tables, numerous figures and photos make this an easy book to extract the relevant slices of information needed. Any conservation book which advocates and I quote "Management should not be undertaken simply to benefit one species." is certainly worth having and using.

### British Hoverflies Second Supplement

Since the publication of the *British Hoverflies* in 1983 there have been considerable advances in our knowledge of the taxonomy, biology and ecology of this group. Fortunately for those people interested in syrphids there has been up-to-date information made available in the form of the two supplements to this book. It was most pleasing to see continental papers cited showing that the work is thoroughly researched.

There are key notes of the 15 species of syrphid added to the British list, with a replacement couplet for the key given. This is very useful since, as is most often the case taxa are added to the British list without recourse to giving an alternative couplet which often leads to difficulties in separating new taxa. The new keys to *Platycheirus* and *Sphaerophoria* are well illustrated with most key characters being figured, making identification far easier. For the first time a key to females of *Neocnemodon* is provided and notes on the identification of both *Paragus* and *Parhelophilus* females. A bibliography of some 300 references is given allowing the reader to go to original work.



Overall a useful addition to the library. I especially liked the statement listed under *Sphaerophoria* species B "More material is needed to be sure that this specimen is not a freak" – this shows caution when adding a new species and is the sign of a methodical taxonomist. This is a must for all entomologists working on syrphids, giving useful biological data covering some conservation issues, as well as providing illustrated "user friendly" keys.

## Plant selection by Orange-tips

by Humphrey Kay

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Every year it is a pleasure to watch the female Orange-tips (*Anthocaris cardamines*) inspecting and selecting plants of lady's smock (*Cardamine pratensis*) in my garden on which to lay their eggs. There is never more than one egg per plant resulting at the time of writing (15th June) in 20 rapidly growing caterpillars. But whereas they have been very restrictive with cardamine, there is over the hedge a single specimen of an alternative foodplant, garlic mustard (*Alliaria periolata*), and this has been so attractive that there are now seven caterpillars on the one plant. It may be big enough to feed them all but there may be cannibalism when they are bigger.

#### Stolen Books

by Brian Gardiner

The following books were stolen in Harpenden on the night of 5th November 1998. Any person who is offered a copy of the books should contact PC Munday of Harpenden Police on 01382 768769.

Albin, Ebenezer. A Natural History of Spiders and Curious Insects. 4to Old leather, hand-cold plates. Fine copy 1736.

Stroll - Chester Title uncertain (but almost certainly Representation des Spectres, des Mantes, des Sauterelles, des Grillons, des Criquets et des Blattes\*) 2 vols one in French and one in Dutch - on bugs. Hand cold plates 4to contemp half calf. Fine copy 1780-1788. \* Dutch title is Natuurlyke en naar T leven naauwkeurig gekleude afbeeldingen en beschryvingen der Spooken, Wandelende, Bladen, Zabelspringe-Haanen Krekrels, Treksprinkhaanen en Kakkerlakken.





PLATE 99A. Larvae of *Heliothis armigera*. (E. Hayashi – The carnivorous larvae of *Heliothis armigera*)



PLATE 99B. Adult moth of *Heliothis armigera*. (E. Hayashi – The carnivorous larvae of *Heliothis armigera*)





PLATE 99C. Black larva of *Heliothis armigera* prior to its change of colour. (E. Hayashi – The carnivorous larvae of *Heliothis armigera*)



PLATE 99D. Green last instar of *Heliothis armigera*. (E. Hayashi – The carnivorous larvae of *Heliothis armigera*)





PLATE 99E. The *H. armigera* larva having consumed the *P. machaon* larva. (E. Hayashi – The carnivorous larvae of *Heliothis armigera*)



PLATE 99F. The *H. armigera* larva begins its attack on the *P. brassicae* larva. (E. Hayashi – The carnivorous larvae of *Heliothis armigera*)





PLATE 99H. A freshly emerged male on rabbit droppings.

(A. Whitlock – Bag of Delight . . .)

(A. Whitlock – Bag of Delight . . .)



ound. PLATE 99J. Male Purple emperor photographed on chalk downland in 1997. (A. Whitlock – Bag of Delight . . . )



PLATE 991. Male Purple Emperor pose, feeding from the ground. A. Whitlock - Bag of Delight . . .)



# Spider Studies on Fair Isle (Shetland) over a three year period: distribution, phenology and the zoogeographical context

by J. Edward Milner<sup>1</sup> and N. Riddiford<sup>2</sup> (9388)

#### **Summary**

Spiders have been studied on Fair Isle over a three-year period with regular pitfall trapping during that time together with general collecting in all parts of the island.

The species list has been increased from 46 to 78 with several species new to Shetland. A total of 4998 spiders were taken in the traps and the results have been analysed under the following headings: (a) Overall results; numbers and species, (b) New records, (c) Variation between sites, (d) Effects of diversity, (g) Linyphiids as a proportion of the catch. An annotated list of the newly recorded species is included with phenological information (where available) and known regional distributions.

**KEYWORDS**: Fair Isle, Shetland, spiders, pit-fall trapping, diversity, altitude, phenology.

#### Introduction

Fair Isle (VC 112, Shetland) is a 3km² rocky island lying in an isolated position at nearly 60°N, almost midway between North Ronaldsay (Orkney) and Sumburgh at the southern tip of the mainland of Shetland. The spiders of Fair Isle have previously been reported by Lindroth (1955), Cloudsley-Thompson (1956), Carpenter (1962), and Milner (1987): in total these writers reported a list of 46 species from the island. Most of these records were from visits made during summer months as the winter is rather harsh; prior to the present study little or nothing was known about the occurrence of spiders of Fair Isle during the winter months.

Spiders are not well-known from the northern islands of Orkney, Fair Isle or Shetland. There are scattered records by a number of authors principally Bristowe (1931), Duffey (1955), Hillyard (1977) and Surtees (1976). Ashmole (1979) made a number of studies on the mainland of Shetland over several years. As a result of these studies, and by reference to other authors such as Holm (1967 etc.), Brandegaard (1928, 1946 and 1958) and Bengtson & Hauge (1976, 1979), he was able to put

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the spiders of Shetland (including Fair Isle) in a regional zoogeographic context – that is within the triangle of Greenland, Scotland and Scandinavia. A proportion of the species recorded for Shetland and Fair Isle exhibit a geographical distribution and occurrence at high altitudes which indicate a tolerance of extreme conditions. These "northern" or "montane" species make up a substantial proportion of the spider fauna on both Shetland and Fair Isle, while another group of species appears to reach the northernmost limit of its range on Fair Isle or Shetland; that is they are not found on islands further north. This situation may change in the coming years under global warming.

#### Fair Isle

Fair Isle is a hilly island, surrounded on most sides by precipitous cliffs. The main part of the island consists of a sloping plateau, while near the northernmost point the ground rises steeply to the summit of Ward Hill (217m) the highest point on the island. Geologically it consists almost entirely of sediments of the Middle Devonian (Old Red Sandstone) with some peat deposits: the soils are generally acid.

The island lies in the north temperate zone, but its climate is often described as hyper-oceanic (Birce 1974). Conditions are greatly influenced by the island's size, its location in the path of a warm water current (the North Atlantic Drift), and its position in relation to the weather systems tracking eastwards across the northern part of the Atlantic Ocean. While temperatures are never extreme, they are rarely high, the mean temperatures for the coldest month (February) being 4.2°C and for the warmest month (August) only 11.9°C, however the mean number of days with frost are 59 (ground) but only 18 (air). Fair Isle is a very windy place, with a high wind chill factor in the air especially on the higher ground; mean number of days per annum with a wind speed of >34 knots is 58. Mean annual rainfall is 918mm, there being on average 242 days with measurable rain per annum. (D. Wheeler (Fair Isle Meteorological Station) pers. comm.)

Fair Isle has been an island since before the Ice Ages two million years ago, but the peat deposits and present flora and fauna date from around 10,000 years ago when the ice retreated at the end of the last Ice Age.

Before human settlement around 4000 years ago, most of the island was probably covered with deciduous scrub (Scott & Palmer 1987) but the current vegetation and landscape reflect a long history of human



influence, in particular the introduction of grazing animals such as sheep. Peat has also been removed in some places down to the bedrock, and the result is a patchwork of moorland, coastal grassland, arable fields, "improved" pasture and boggy areas. The study area of Ward Hill and the area near The Gulley, is now year-round common unimproved sheep-grazing. Much of the vegetation of Fair Isle today hugs the ground reflecting the combined pressures of grazing, wind and salt-spray.

#### The Fair Isle Study: Introduction

Since 1987 the authors have made collections of spiders in different parts of Fair Isle, and conducted pitfall-trapping over an extended period at a number of sites at different altitudes on Ward Hill. Traps were also set for limited periods around the Finniquoy Gulley (referred to hereafter as The Gulley), a small, sheltered, steep-sided valley near the north-east coast of the island. Trapping at the sites on Ward Hill continued for over three years and the catches for three complete 12-month periods (January 1988 through to January 1991) have been examined.

As the trap sites differed in altitude, vegetation density and dampness, differences observed in the spider catches were interpreted as being related to these factors, although precise assessment of the relative importance of each factor would need more detailed study.

As a result of this study a total of 33 species not previously recorded on Fair Isle were found (of which 11 were also new to Shetland) and the total list for the island now stands at 78. Of these 54 (68%) are Linyphiids and 25 (43%) other families.

#### **Materials and Methods**

Searching, sweep-netting, turning stones, beating low vegetation and sorting of vegetation was done at several places and times. Pitfall-trapping was conducted using trios of standard polythene pitfall traps (of diameter 75mm and depth 104mm) set in a triangular configuration at each site and the catch aggregated at each emptying. A small amount of ethylene glycol with some washing-up liquid as a wetting agent was used in each trap as a medium to hold the specimens and to prevent carnivorous beetles damaging or consuming the catch. Small zinc roofs were used to help keep out the rain, and the traps were emptied at approximately monthly intervals (with some irregularities) for a period of three years from December 1987 to February 1991.



#### The trap-sites were:

Site A: 215m above sea level (asl). Near the exposed summit of Ward Hill, in short-turf coastal grassland with *Festuca rubra* dominant and *Armeria maritima*, *Holcus lanatus* and the lichen *Peltigera canina* frequent. Other relatively frequent components of the diverse vegetative community included acid-soil indicators *Festuca vivipara*, *Nardus stricta* and *Potentilla erecta*, while *Plantago maritima* and *Armeria maritima* demonstrated the influence of salt-laden winds even at 215m asl. Arcticalpine elements included some *Polygonum viviparum* and just ten metres from the trap site, broken ground with very thin soil supporting a vegetative community dominated by the tiny *Salix herbacea*. The traps were set on the west side of the summit and within two metres of the highest point, on a free-draining slope of around 10°. The soil was thin (5-9cm deep) and the vegetation height did not exceed 0.5cm apart from tufts of *N. stricta* up to 4cm.

Site B: 205m asl. (Fig. 1). On the north side of Ward Hill just below the summit in damp unimproved grassland on acid soil with *N. stricta* dominant and frequent *F. vivipara*, *Agrotis stolonifolium*, *Luzula sylvatica* and *Potentilla erecta*. Other components of the vegetation included *Carex binervis*, *Eriophorum angustifolium*, and an "understorey" of the moss *Hypnum cupressiforme* evidence of partly impeded drainage. The traps were set immediately below the west site of the summit, at around 205m asl, on a slope of approximately 10° with a westerly aspect. The soil was peaty clay with a depth of around 35cm. The vegetation height was around 10cm.

Site C: 155m asl. At the base of the steep summit of Ward Hill in a patch of dry heath on acid peaty soil. The site was chosen as being typical of a major vegetation type on higher ground within the Fair Isle hill grazings. The restricted plant community comprised dominant low, dense *Calluna vulgaris* interspersed with frequent swatches of *Empetrum nigrum*, some *Erica cinerea* and occasional plants of a few other species such as: *Festuca rubra, Luzula multiflora, Eriophorum angustifolium*. Immediately south of this patch was an eroding bank of exposed peat, partly colonised by the lichens *Cladonia* spp. The traps were set on a patch of level ground, in generally south-east facing moorland of variable slope. The soil was a shallow peaty podzol with a depth of around 30cm.

Site D: 110m asl. This was set in a very damp boggy area, but as it soon became regularly flooded in the early part of the study it was abandoned.





Fig. 1. The view over west cliffs of ward Hill showing vegetation at site B in the foreground.

Site E: 70m asl. (Fig. 2). Near the centre of an extensive (350m x 250m) area of flushed valley mire (Sukka Mire) just west of the airstrip, on a moderately deep peat substrate. The vegetation at the trap site was typical for the mire as a whole, with *Eriophorum angustifolium* and the moss *Sphagnum subnitens* dominant, and with *N. stricta, Carex flacca* and *Hydrocotyle vulgaris* frequent. The vegetation at the trap-site was relatively diverse with a number of other grasses present. The traps were set on level ground at around 70m asl. The soil type was blanket peat with a depth of about 90cm, permanently waterlogged with limited through-flow of water and the water-table close to but rarely exceeding the surface. Vegetation height, though low by national standards, was greater than at the other sites, ranging from three to 15cms with some much taller stems.

This site was affected by the digging of a drainage ditch in October 1988 which started to affect the water-table of the area in the dry summer of 1989, but whose full effect was probably not felt until the second summer (1990).

Site F: about 125m asl. Within a small, heavily vegetated peat pool in transition to a basin mire. The moss *Sphagnum cuspidatum* was dominant and in much of the pool formed a single-species carpet,



gradually being colonised by *Hydrocotyle palustris*. Other plants present were *N. stricta, Juncus articulatus* with the mosses *Aulacomnium palustre* and *Sphagnum auriculatum*. The water table was near or above the surface of the vegetation at all times and the traps though set in the driest part were frequently flooded, resulting in erratic and incomplete results from this site. The vegetation height adjacent to the traps was up to 10cm.

Pitfall traps were also set for limited periods around The Gulley, at about three metres and about 12 metres altitude.

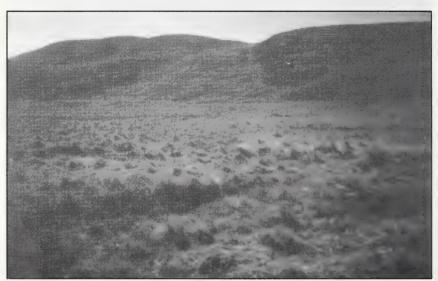


Fig. 2. A view of Sukka Mire also looking west with site E in the foreground.

#### Results and interpretation

#### (a) Overall results: numbers and species

As a result of the general collecting in various parts of the island, and the pitfall-trapping, the total list of species recorded from Fair Isle has been increased from 46 to 78, and that for Shetland (including Fair Isle) to 110. This has recently been raised to 112 (Milner 1996.)

The pitfall-trapping at the four main sites (A, B, C and E) over the three year study period producing a total of 4997 spiders (13140 trap nights) representing 56 species, while another 22 species were found at other sites or by searching *etc.*, or had been previously reported but were not found during this study. The overall results of the trapping are given in tables 1 and 2.

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**Table 1.** Total catch at each site for the three years from 4.1.88 to 4.1.91. \*\* = Linyphiidae spp. as % of species.

| Year                                 | A          | B Sit        | e C          | E            |
|--------------------------------------|------------|--------------|--------------|--------------|
| 1 Total catch                        | 317        | 482          | 633          | 640          |
| spp. & % linyphiids                  | 20 (95%)   | 18 (94%)     | 23 (70%)     | 34 (68%)     |
| 2 Total catch spp. & % linyphiids    | 299        | 477          | 416          | 452          |
|                                      | 13 (100%)  | 18 (94%)     | 17 (71%)     | 31 (74%)     |
| 3 Total catch                        | 264        | 429          | 352          | 236          |
| spp. & % linyphiids                  | 12 (83%)   | 16 (94%)     | 16 (75%)     | 25 (72%)     |
| 3 years combined spp. & % linyphiids | 880        | 1388         | 1403         | 1327         |
|                                      | 24 (96%)   | - 26 (96%)   | 25 (68%)     | 39 (72%)     |
| overall mean spp. & % linyphiids     | 15 (95.6%) | 17.3 (94.2%) | 18.7 (71.7%) | 30.3 (71.5%) |

Spider catches from pitfall-traps like other field observations of animal communities are obviously affected by weather conditions during the study period. Fair Isle's weather is carefully monitored and has been recorded continuously since 1974 (D. Wheeler, *pers. comm.*). The study period was within a period (1988-93) of consistently slightly higher than average temperatures. 1988 was slightly (but not significantly) wetter than average, while 1989 was marginally the warmest, driest and sunniest year since 1974.

In the study both total numbers and species richness were highest in the first year and declined somewhat in the two subsequent years. The reduced numbers could have been partly caused by the weather, but in addition the catches for the second and particularly the third year were much reduced for Site E which had dried out considerably. The results for this site in Year three especially are therefore probably untypical as the habitat had changed. As Table 2 shows, several species present in years one and two were absent from year three.

The most abundant species in year one, *Pirata piraticus*, a marshland species declined dramatically from 331 individuals in year one to zero in year three. *Lepthyphantes ericaeus*, *L. zimmermanni*, *Robertus arundineti* and *Gongylidiellum vivum* were also present in years one and two but absent in year three. *Agyneta decora* also declined markedly but as this decline occurred at Sites A and B too, it cannot be attributed to the drying out of Site E alone. However, the substantial decline in numbers and species richness at Site E does suggest that damage can be caused in these sensitive habitats by simple physical operations such as minor drainage works.



cont . .

**Table 2.** Catches for sites A-E in each 12-month period: all species with aggregate of 10 or more in the three year study period. Species are arranged according to apparent altitude preferences, descending from the highest (site A).

| Site            |     | ¥   |     |     | B        |     |     | С        |     |    | E        |    |     | Total    | _   |      |  |
|-----------------|-----|-----|-----|-----|----------|-----|-----|----------|-----|----|----------|----|-----|----------|-----|------|--|
| Year            | 1   | 7   | 33  | -   | 7        | 3   | 7   | 7        | 3   | =  | 7        | 3  | _   | 7        | 3   |      |  |
| 5. promiscua    | 09  | 133 | 20  | 2   | 2        | 6   | I   | - 1      | ı   | I  |          | I  | 62  | 136      | 59  | 227  |  |
| bardyi          | 24  | 16  | 31  | l   | 1        |     | 5   | 3        | 2   | l  | I        | I  | 29  | 19       | 34  | 82   |  |
| T. digitatus    | 19  | 4   | 11  | 1   | 1        | 2   | 3   | 4        | 2   | _  | 1        | ı  | 24  | $\infty$ | 15  | 47   |  |
| Rb. morulus     | 4   | 9   | 1   | _   | -        | 1   | 4   | 1        | ı   |    | -        | !  | 10  | _        | П   | 18   |  |
| W. antica       | 7   | _   | ı   | -1  | ŀ        | ı   |     | 1        | 1   | 1  | 1        | 1  | ∞   | 2        | 0   | 10   |  |
| 4. decora       | 22  | _   | I   | 74  | 118      | 19  | 1   | 1        | I   | 16 | $\alpha$ | i  | 113 | 130      | 19  | 262  |  |
| 3. concinna     | 156 | 123 | 178 | 204 | 216      | 174 | 462 | 322      | 264 | 39 | 17       | 30 | 861 | 829      | 646 | 2185 |  |
| 3. bicolor      | 1   | 1   | 6   | I   | ł        | 162 | _   | 1        | ı   | 4  | 33       | 43 | 9   | 34       | 214 | 254  |  |
| M. castaneipes  | 4   | 1   | 1   | 64  | 31       | 9   | 1   | 1        | ł   | I  | I        | ı  | 89  | 31       | 9   | 105  |  |
| W. clavicornis  | 1   | _   | 5   | 25  | 15       | 15  | 1   | 1        | i   | ł  | I        | I  | 25  | 16       | 20  | 61   |  |
| 3. rubens       | 7   | l   | 1   | 46  | 39       | 15  | _   | 2        | 9   | 5  | _        | 2  | 65  | 42       | 23  | 124  |  |
| s. elegans      | -   | 1   | 1   | 14  | 16       | 5   | ı   | 1        | 1   | 5  | _        | 12 | 20  | 23       | 18  | 61   |  |
| R. Hvidus       | -   | 1   | 3   | 2   | 3        | I   | 1   | 1        | 1   | -  | 1        | I  | 4   | 3        | 3   | 10   |  |
| 9. brevisetosum | 1   | 1   | I   | ν.  | 12       | 4   | -1  | ı        | ı   | I  | 1        | 1  | 5   | 12       | 4   | 21   |  |
| I. ericaeus     | 4   | 1   | ı   | 21  | 6        | 11  | 56  | 16       | 15  | 33 | 8        | -  | 57  | 28       | 27  | 112  |  |
| W. acuminata    | -   | 1   | 2   | 16  | $\infty$ | _   | 48  | 31       | 22  | 8  | 8        | 8  | 89  | 43       | 28  | 139  |  |
| 2. brevipes     | 1   | ł   | i   | 1   | I        | 1   | 20  | œ        | 6   | I  | _        | 3  | 20  | 6        | 12  | 41   |  |
| 3. prudens      | 1   | -   | 1   | 1   | -        | 1   | _   | 7        | 2   | I  | 1        | 1  | 7   | 3        | 8   | 13   |  |
| L. zimmermanni  | 1   | I   | ļ   | 2   | ı        | 1   | 7   | $\infty$ | 5   | 2  | 7        | ı  | 9   | 10       | 9   | 22   |  |
| K. cristatus    | 1   | 1   | į   | 1   | 1        | _   | 9   | 4        | _   | -  | 6        | 5  | _   | 13       | _   | 27   |  |
|                 |     |     |     |     |          |     |     |          |     |    |          |    |     |          |     |      |  |



|           | ~           | 7            | _          | 7            | 10         | ~1      |                   | 0           | _          |            |                 | 6         | ~            | 0        | 0           | 0            | ~              |                       |              |                  |      |
|-----------|-------------|--------------|------------|--------------|------------|---------|-------------------|-------------|------------|------------|-----------------|-----------|--------------|----------|-------------|--------------|----------------|-----------------------|--------------|------------------|------|
| 19        | 63          | 4            |            | 407          |            | 72      | 31                | 30          | 2          | 2          | 21              | 19        | 18           | 1(       | 1(          | 7            | 4998           |                       |              |                  |      |
| 7         | 22          | 19           | 26         | 0            | 24         | 4       | ∞                 | _           | 26         | 3          | 7               | 1         | 2            | 0        | 3           | 13           | 1282           |                       |              |                  |      |
| 3         | 23          | ∞            | 94         | 9/           | 34         | 44      | 19                | 20          | 0          | 14         | 3               | _         | 6            | 7        | 4           | 33           | 1645           |                       |              |                  |      |
| 6         | 18          | 20           | 107        | 331          | 27         | 24      | 4                 | 3           | 1          | 4          | 16              | 111       | 7            | 3        | 3           | 24           | 2071 1645 1282 |                       |              |                  |      |
| 3         | 14          | 13           | 24         | 1            | 24         | 4       | $\infty$          | _           | 26         | 3          | 7               | 1         | 2            | 1        | 3           | 3            | 236            |                       | 3            | 25               |      |
| 3         | 18          | 5            | 88         | 92           | 34         | 44      | 19                | 20          | I          | 14         | 3               | _         | 6            | 7        | 4           | 19           | 452            | 1327                  | ς.           | 31               | (39) |
| 5         | 15          | 14           | 83         | 331          | 27         | 24      | 3                 | 3           | 1          | 4          | 16              | 11        | 7            | 2        | 3           | 6            | 639            | 1                     | 9            | 34               |      |
| 4         | œ           | 9            | 2          | ı            | ı          | ı       | I                 | ı           | ı          | 1          | ı               | ı         | 1            | 1        | I           | 4            | 352            |                       | 2            | 16               |      |
| 1         | $\sim$      | 3            | 9          | ı            | ı          | ١       | ı                 | ı           | ı          | ı          | 1               | 1         | I            | ı        | 1           | 3            | 418            | 1403                  | 3            | 17               | (25) |
| 8         | 3           | 9            | 24         | I            | ı          | i       | ı                 | ı           | 1          | 1          | I               | 1         | I            | ı        | I           | _            | 633            | 1                     | 5            | 23               | Ü    |
| 1         | ı           | 1            | 1          | ŀ            | 1          | ı       | ı                 | 1           | I          | 1          | I               | I         | 1            | 1        | ł           | 3            | 429            |                       | $\vdash$     | 16               |      |
| 1         | 1           | ı            | 1          | 1            | 1          | Į       | ı                 | I           | ı          | ı          | ı               | ı         | I            | I        | I           | 9            | 477            | 1388                  | ν            | 18               | (26) |
| 1         | 1           | 1            | 1          | 1            | ı          | 1       | 1                 | ı           | 1          | ı          | ŀ               | 1         | ı            | 1        | I           | 3            | 482            |                       | 2            | 18               |      |
| 1         | 1           | 1            | I          | 1            | 1          | 1       | ı                 | . 1         | ŀ          | 1          | 1               | ı         | 1            | I        | 1           | 8            | 264            |                       | 2            | 12               |      |
| i         | l           | ı            | I          | 1            | I          | 1       | ı                 | ı           | ı          | ı          | I               | I         | 1            | I        | I           | $\sim$       | 299            | 880                   | 2            | 13               | (24) |
| ŀ         | ı           | ı            | 1          | 1            | i          | 1       | ı                 | 1           | ı          | 1          | 1               | ł         | 1            | 1        | t           | v            | 317            |                       | 5            | 20               |      |
| L. mengei | B. luteolus | T. terricola | P. pullata | P. piraticus | P. degeeri | O. trux | H. bituberculatum | T. thorelli | X. miniata | M. mossica | A. pulverulenta | L. tenuis | D. permixtus | G. vivum | C. obscurus | others (nos) | total (nos)    | Three years combined: | total (spp.) | aggregate (spp.) |      |



#### (b) New records

As might be expected, systematic study also led to a number of new species being recorded for the island, several also being new records for Shetland. A number of these are of particular interest because according to Ashmole (1979) they could have been expected to be present on Shetland from their wider distribution. *Cnephalocotes obscurus* occurs on Iceland and similar latitudes in Fennoscandia, and recently on Orkney (Snazell, *pers. comm.*). *Gongylidiellum vivum* is known from the Faeroes and Fennoscandia, and only in 1994 from Orkney (Snazell, *pers. comm.*); *Walckenaeria cuspidata* is known from Orkney, Faeroes, Iceland, Fennoscandia and even Greenland but had not previously been recorded from Shetland.

Some of the newly recorded species notably *Xerolycosa miniata* and *Trichopterna thorelli* do not come into the same category. Neither has been recorded from further north; these new records for Fair Isle are the most northerly records so far for these species. *T. thorelli* has subsequently been recorded from Orkney (Snazzell, *pers. comm.*).

It is most unlikely that the complete spider fauna for Fair Isle is yet known, and in any case this is likely to be a dynamic feature of the island with changes due to global warming anticipated. In other words more southern species are likely to become established in these northern islands in coming years, although the speed at which this may happen is not known.

#### (c) Variation between sites

Eight species were recorded at all four main pitfall sites, although in very different numbers. These were *Centromerita concinna*, *C. bicolor*, *Typhochrestus digitatus*, *Agyneta decora*, *Walckenaeria acuminata*, *Rhaebothorax morulus*, *Gonatium rubens* and *Lepthyphantes ericaeus*. The distribution of all the species in relation to altitude is shown in Table 2.

Over the three year period as a whole the three higher sites produced smaller total numbers, lower species richness, and higher proportions of Linyphiids (see Table 1) than Site E which was more sheltered and damper as well as being lower. The aggregate numbers of individuals for the different sites were largely influenced by the extraordinary abundance of the commonest species *Centromerita concinna*, which as Table 2 shows, dominated the catch at the three higher sites (A, B and C) where it made up a substantial or overwhelming proportion of the total annual catch (42% to 77% of the



total numbers). This single species made up 43.7% of the total catch at all sites. On the other hand six species including *Hilaira frigida*, *Porrhomma montanum* and the pioneer species *Savignia frontata* all occurred at minimal frequencies, that is, a single specimen over a three year period.

As Table 3 shows, a small group of species made up a very large proportion of the catch at all sites. In addition to *C. concina*, three species *Erigone promiscua*, *Monocephalus castaneipes* and *Agyneta decora* made up a large proportion of the catch at Sites A and B, while at Site E *Pirata piraticus* and *Pullata palustris* dominated the catch in the first two years. The total numbers were greater at Site E and the proportion of Linyphiids lower reflecting the more sheltered and structurally diverse nature of the habitat. Three specimens common in rough grassland throughout the British Isles were among the most abundant six species at Site E (*Pachygnatha degeeri*, *Pardosa pullata* and *Ozyptila trux*) and this site also produced several of the new records for Shetland.

The boggy Site F is not included in the main results; this is because when precipitation was high the traps at this site rapidly flooded and did not function. From the limited data obtained it was clear that the site was dominated by three wetland species *Drepanotylus uncatus*, *Diplocephalus permixtus* and *Pirata piraticus* which together made up well over 50% of the (incomplete) catch in all three years, while the new record *Lophomma punctatum* (another wetland specialist) was taken frequently.

**Table 3.** Most abundant species: proportion (% of total catch) of the most abundant species, by site and year.

| Site         |    | A  |    |    | В  |    |    | С  |    |    | E  |    |
|--------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Year         | 1  | 2  | 3  | 1  | 2  | 3  | 1  | 2  | 3  | 1  | 2  | 3  |
| C. concinna  | 49 | 45 | 67 | 42 | 45 | 41 | 73 | 77 | 76 |    | _  | 13 |
| E. promiscua | 19 | 41 | 8  | -  | -  | _  |    | -  | _  | -  | -  | -  |
| A. decora    | _  | _  | -  | 15 | 25 | 4  | -  | _  | _  | -  | _  | -  |
| P. piraticus | _  | -  | _  | _  | _  | _  | _  | _  | _  | 52 | 17 | 0  |
| P. pullata   | -  | -  | _  | _  | _  | _  | -  | _  | -  | 13 | 19 | 0  |
| C. bicolor   | -  |    | -  | -  | -  | 38 | -  | -  | _  | -  | -  | 19 |

### (d) Effects of altitude

From the distribution at different sites, some apparent ecological differences between the species can be seen which are probably



affected directly or indirectly by altitude. In Table 2 the species are arranged according to apparent altitude preferences, showing that there are apparently groups of species particularly associated with specific sites.

Table 4 lists all species found at or above 100m on Fair Isle, with the corresponding altitude ranges recorded in other studies. One group of species occurs on the upper slopes of Ward Hill but not lower down. In this respect although the summit is only about 215m it shows similarities with other high altitude sites both on the Shetland mainland (such as Ronas Hill) and the hills of the Scottish mainland.

Fourteen species referred to by Ashmole (1979) as "obligate montane" or "facultative montane" species are found near the summit of Ward Hill at sites A or B. Some of these such as *Scotinotylus evansi, Rhaebothorax morulus, Hilaira frigida* and *Porrhomma montanum* have been taken on Fair Isle at lower altitudes than in other studies. This can be attributed to the peculiar conditions on Fair Isle where the effects of altitude appear to be magnified. The total area of the summit of Ward Hill is very limited and the populations of some of these species may be very small – possibly as low as a few hundred individuals – which are effectively isolated from other populations.

**Table 4.** Lists of species recorded from over 100m on Fair Isle or Shetland mainland (as of 1.1.96).

- 1 = "obligate montane" species.
- 2 = "facultative montane" species.
- 3 = "occasional montane" species (as defined by Ashmole, 1979).

FI = Fair Isle; SH = Shetland mainland (Ashmole); BH = Ben Hope (Merrett): CM = Craig Meagadh (D. Horsfield, *pers. comm.*).

#### Altitudes in metres.

|                        | FI      | SH      | BH      | CM               |
|------------------------|---------|---------|---------|------------------|
| LINYPHIIDAE            |         |         |         |                  |
| 3 Ceratinella brevipes | 10-155  | 200-290 | 457     | 290-895          |
| 3 W. acuminata         | 5-215   | 200-410 | 488-610 | 280-790          |
| W. antica              | 70-215  | _       | -       | 280-760          |
| 2 W. nudipalpis        | 150-215 | 200-290 | 274-777 | 290-1000         |
| 1 W. clavicornis       | 200-215 | 230-390 | _       | 760-1000         |
| W. vigilax             | 70-215  | -       | -       | 290-450          |
| D. brevisetosum        | 5-205   | -       | _       | 290              |
| H. bituberculatum      | 10-205  | -       | _       | 280-1000         |
| 3 Gonatium rubens      | 10-205  | 200-290 | 152-610 | 280-790          |
| Oedothorax fuscus      | 10-215  | -       |         | -                |
| Silometopus elegans    | 20-215  | -       | 274-610 | 280-1000<br>cont |

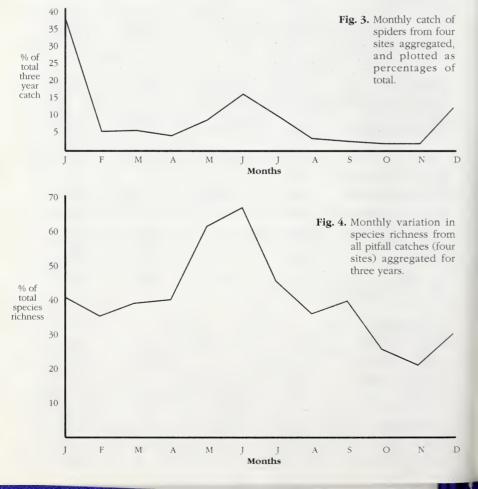


| Table 4 cont              | FI      | SH       | ВН      | СМ       |
|---------------------------|---------|----------|---------|----------|
| Cneph. obscurus           | 70-150  | _        | _       | 280-610  |
| M. castaneipes            | 50-215  | _        | _       | 510-885  |
| Lophomma punctatum        | 70-150  | _        | _       | _        |
| Gongylidiellum vivum      | 20-215  | _        | 457     | 280-450  |
| Erigonella biemalis       | 10-205  | <30      | _       | 280-1000 |
| Savignia frontata         | 10-215  | _        | 914     | 885      |
| D. permixtus              | 20-160  | _        | 610     | 450-790  |
| 1 Scotinotylus evansi     | 155-215 | 200-410  | 77-914  | 885      |
| T. digitatus              | 20-215  | _        | _       | -        |
| Erigone atra              | 10-155  | 0-180    | _       |          |
| E. promiscua              | 5-215   | 0-115    | 274-914 | 790-1000 |
| 2 Rhaebothorax morulus    | 70-215  | 200-410  | 610-762 | 885-1000 |
| Drepanotylus uncatus      | 20-150  | 200-410  | 010-702 | 375      |
| 1 0                       |         | _        | _       | 3/3      |
| Leptothrix hardyi         | 150-215 | 200, 450 | 274.014 | 700 1000 |
| 1 Hilaira frigida         | 40-215  | 200-450  | 274-914 | 790-1000 |
| 2 Porrhomma montanum      | 180-205 | 400-450  | -       | -        |
| Agyneta decora            | 5-215   | _        | 541-762 | 610-790  |
| 2 Centromerus prudens     | 150-215 | 200-450  | 610-762 | 1000     |
| Centromerita bicolor      | 15-215  | _        |         | 790-975  |
| 2 C. concinna             | 5-215   | 200-450  | 274-610 | 375-1000 |
| Bathyphantes parvulus     | 10-150  | _        | _       | -        |
| 2 Poeciloneta variegata   | 5-215   | 200-290  | _       | 280-450  |
| 2 Bolyphantes luteolus    | 5-200   | -        | -       | 450-510  |
| Lepthyphantes tenuis      | 5-150   | _        | 9       | _        |
| 2 L. zimmermanni          | 5-215   | 200-410  | 274-762 | 280-760  |
| L. mengei                 | 10-150  | -        | 9-914   | 280-1000 |
| 3 L. ericaeus             | 5-215   | 200-390  | 152-914 | 280-885  |
| Allomengea scopigera      | 30-150  | -        | -       | -        |
| OTHER FAMILIES            |         |          |         |          |
| 1 Clubiona trivialis      | 15-160  | 200-290  | 152     | 375-510  |
| Xysticus cristatus        | 15-180  | ?        | 152-457 | 315-885  |
| 1 Pardosa palustris       | 20-155  | 200-390  | 914     | 885      |
| 1 P. pullata              | 5-155   | 200-390  | 152-610 | 280-790  |
| 2 A. pulverulenta         | 5-70    | 200-290  | 488     | 280-1000 |
| 2 Robertus lividus        | 5-215   | 200-450  | 152-610 | 280-975  |
| 2 R. arundineti           | 10-160  | 200-390  | 556-762 | 290      |
| Pachygnatha degeeri       | 10-205  | _        | _       | 280-450  |
| i die sygridistr diegeeri | 10 20)  |          |         | 200 100  |



#### (e) Seasonal differences

Seasonal differences have been analysed by separating the catches for each month (Table 5). However, the monthly analysis is somewhat distorted by irregularities in the trapping periods as trap emptying depended on suitable weather and pressure of other work on the resident author. To compensate for these irregularities, the month of the midpoint of the trapping period for each sample is used. Even so unfortunately some months therefore had more samples than others, but figures 3 and 4 show the basic trends. In general the peak of numbers signals the main breeding season as numbers are (usually for a relatively short time) augmented by large numbers of adult males.





One of the most surprising findings was the marked winter peak in total spider numbers. This was largely due to the high numbers of three winteractive (and winter-breeding) species *Centromerita concinna*, *C. bicolor* and *Erigone promiscua* in each of the three years. As a result, when the figures for all three years are aggregated, two of the highest monthly totals were for December and January (537 and 1737 respectively), while the highest aggregate for a summer month was 749 for June.

From the monthly totals (Table 5) it is clear that only a few species showed a peak in numbers in mid-summer, and several species show peaks in the winter months. The two summer months May and June had the highest totals for species richness with nearly twice the average number of species recorded for the two mid-winter months January and February. However even the June aggregate was only 38 species (68%) out of a total of 56 trapped species, and the average figure for June was only 30 (just over 50% of the total species list). Both peaks and absences of individual species are well distributed through the year (Fig. 4).

Taking the overall findings the major seasonal changes in the spider fauna were as follows. In December and January the catches were dominated at sites A to E by Centromerita concinna and C. bicolor which together made up over 75% of the catch. At the two highest sites some other species made up a substantial proportion of the catch, notably Leptothrix hardyi and Typhochrestus digitatus and at Site C Walckenaeria acuminata and at lower altitudes Bolyphantes luteolus. By March the numbers of C. concinna had fallen and Erigone promiscua numbers reached their peak at the two highest sites. From March to June Drepanotylus uncatus reached a peak in the wet areas, followed at Site E by the peak for Pachygnatha degeeri. By May many of the summeractive Lycosids, Thomisids and some Linyphiids such as Agyneta decora reach their peaks. At the same time at the highest sites other species such as Walckenaeria clavicornis (an arctic species), Monocephalus castaneipes and Silometopus elegens all reach their peak. Gonatium rubens is unusual in reaching a clear peak in numbers in September and October when it was the most abundant spider at Site B.

The only species trapped as adults throughout the whole year was *C. concinna* although *Lepthyphantes ericaeus* and *G. rubens* both appeared in all but one month. Less than half the total species were restricted to the months of March to September, but this group of species included most of the larger species such as *Pardosa pullata* and *Alopecosa pulverulenta* and the two Thomisids *Xysticus cristatus* and *Ozyptila trux*. Several winter-active species were virtually absent as adults during the summer including *T. digitatus*, *L. hardyi* and *Bolyphantes luteolus*.



Table 5. Three years catches, aggregated by month (taken as the mid-point of the trapping period for each catch), from 4.1.88 to 4.1.91, sites A-E only.

| %     |      |     |     | 5.1 |     | 4.5      |          |     | 2.2      |     |    |    |     |          |     |     |    |     |    |    |    |    |          |          |    |     |
|-------|------|-----|-----|-----|-----|----------|----------|-----|----------|-----|----|----|-----|----------|-----|-----|----|-----|----|----|----|----|----------|----------|----|-----|
| Total | 2185 | 407 | 262 | 254 | 227 | 227      | 139      | 123 | 112      | 105 | 85 | 82 | 7.2 | 63       | (51 | 6.1 | 47 | -47 | 7  | 31 | 30 | 27 | 27       | 22       | ~1 | 7.1 |
| Dec   | 399  | 1   | 1   | 26  | 1   | 1        | 28       | 7   | $\infty$ | ŀ   | 1  | 11 | 1   | 19       | 1   | I   | 1  | 6   | -  | 1  | 1  | 1  | -        | <b>(</b> | 1  | 1   |
| Nov   | 51   | I   | 1   | 1   | İ   | 1        | $\infty$ | 10  | ~1       | 1   | 1  | 11 | ı   | $\sim$ 1 | 1   | ı   | I  | ۲.  | I  | ı  | I  | 1  | 1        | ÷        | I  | ;   |
| Oct   | 37   | 1   | I   | 1   | 1   | 9        | 1        | 14  | I        | _   | ~  | 6  | I   | $\sim$ 1 | l   | I   | -  | ı   | -  |    | -  | 1  | I        | _        | I  | 1   |
| Sep   | 22   | 3   | -   | 1   | 7   | 1        | 1        | 40  | -        | 4   | ς. | 3  | 9   | _        | ŀ   | 1   | 3  | I   | 3  | ł  | 1  | 7  | ı        | 7        | 1  | I   |
| Aug   | _    | 28  | 4   | ļ   | 15  | $\infty$ | _        | 12  | 12       | 7   | _  | 1  | 31  | 1        | 1   | -   | -  | ı   | -  | 1  | I  | -  | I        | -        | ı  | 1   |
| Jul   | 6    | 240 | 42  | I   | 30  | 27       | 3        | I   | 10       | 10  | I  | 1  | 14  | I        | 2   | 4   | 14 | ı   | 1  | ł  | ~  | 4  | 25       | 2        | -  | ~   |
| lun   | 16   | 135 | 214 | ı   | 116 | 38       | 4        | _   | 11       | 27  | 17 | I  | 15  | 1        | 1   | 33  | 4  | I   | 3  | 9  | 61 | 10 | _        | ~        | 20 | 16  |
| May   | 47   | I   | 1   | П   | 63  | 19       | 15       | 3   | 16       | 24  | 37 | 1  | 9   |          | 32  | 23  | 15 | I   | 9  | 23 | 6  | 6  | <b>←</b> | _        | 1  | 7   |
| Apr   | 99   |     | i   | 1   |     | 11       | ∞        | 14  | 9        | 16  | 11 | П  | 1   | 1        | 25  | 1   | 3  | 1   | 15 | 2  | 1  | -  | 1        | 1        | 1  | 1   |
| Mar   | 109  | 1   | 1   | 7   | I   | 63       | 11       | 10  | 10       | 8   | 7  | 3  | ı   | 7        | 1   | i   | 9  | 2   | 9  | ŀ  | 1  | ı  | 1        | ļ        | 1  | 1   |
| Feb   | 133  | 1   | -   | 1   | 1   | 35       | 9        | ∞   | 12       | _   | 2  | 5  | ı   | 9        | ı   |     | I  | 4   | 3  | ı  | ı  | I  | -        | I        | 1  | I   |
| Jan   | 1295 | ı   | ı   | 219 | I   | 6        | 55       | 10  | 24       | 1   | 2  | 39 | 1   | 26       | 1   | I   | 1  | 29  | 4  | 1  | I  | I  | 1        | 2        | I  | ı   |
|       |      |     |     |     |     |          |          |     |          |     |    |    |     |          |     |     |    |     |    |    |    |    |          |          |    |     |

cont . .



| D. brevisetosem<br>L. tenius<br>L. mengei<br>D. permixtus<br>Rh. morulus | 1 1 9 % -            | 1 2 2 1   | 1 - 2 - 4 | v     1 0 | 10 2 1       | 4 % 0 % 1                 | 1 2 1 1 | 1 7 1 1 7 | -       |         | 1 - 2 - 1 | 1 1 2 4 1 | 21<br>19<br>19<br>18      |  |
|--|----------------------|-----------|-----------|-----------|--------------|---------------------------|---------|-----------|---------|---------|-----------|-----------|---------------------------|--|
| C. prudens<br>R. lividus<br>G. vivum                                     | . 2 - 1              | 2 1       | ·         |           | 2 % 2        | 1 62 4                    |         | 1 1 2     | 1 1 1   | 2 + 1   | -         | 4 1 1     | 13 10 10                  |  |
| C. obscurus W. antica W. nudipalpis B. ovacilis                          | 116-                 | 1 1 1 1   | 1 1 1 1   | 1 1 2 1   | $\sim$ 1 1 1 | 401-                      | 10      | 1 1 1 2   | 1 % 1 - |         | ₩         | 1 1 4 8   | 10 9 6                    |  |
| M. prominulus E. biemalis H. signifer W. vieidax                         | 1111                 | 1 1 1 1   | 1 1 1     | 1 0 1 1   | 4016         | 2 - 4 -                   |         | 1111      | 1 1 1 1 | 1 1 1 1 | 1 1 1 1   | 1 1 1 1   | v e e e                   |  |
| D. uncatus<br>R. arundineti<br>Oe. fuscus<br>P. variegata                | <b>→</b> 1 1 1       |           | 2         | 1 1 1 1   |              | 1 1 1 1                   | 1 1 1 1 | 1 1 1 1   | 1 2 1 2 | - 1 - 1 | 1 1 1 1   | -         | v 4 w w                   |  |
| A. crassiceps S. evansi C. trivialis P. montanum                         | 1 1 1 1              | 1 1 1 1   | 1 2 1     | I — I I   |              | <i>∞</i> । । <del>।</del> | 1 1 1 1 | 1 1 1 1   |         | 1 1 1 1 | 1 1 1 1   | 1 1 1 1   | c c c c                   |  |
| P. paussrs P. nigriceps P. ludicrum H. frigida S. frontata Total spp.    | 1<br>1<br>23<br>1737 | 20<br>240 |           |           | 1 1 2 35 395 | 1 38 38                   | 26 452  | 21 133    | 23      | 115     | 113       |           | 1<br>1<br>1<br>56<br>4624 |  |



### (f) Fair Isle and species richness

Approximately 70% of known Shetland spiders have now been recorded on Fair Isle. It may be premature to draw detailed conclusions from this as the Shetland list is probably far from being complete. Nowhere in Shetland has a similar concentrated trapping programme been undertaken so far; indeed some Shetland habitats such as the fragments of relic natural scrub woodland, have yet to be investigated at all.

However comparison with well-researched groups, including vertebrates and plants show similar figures for Fair Isle compared with the Shetland mainland. Scott & Palmer (1979) gave the established flora of Shetland as 568 species – a total which excluded those thought to be extinct, casuals, plants of garden or agricultural origin and unconfirmed or dubious records. Using the same criteria, Riddiford (1992) gave the established flora for Fair Isle as 225 species increasing to 233 if those species that had been reliably reported but not seen by the author were included. Thus around 41% of the known Shetland flora occurs on Fair Isle – a figure which would be expected from the Theory of Island Biogeography which holds that a reduction of 90% of area should be associated with a 50% drop in species. In comparison the spider fauna of Fair Isle appears to be richer than would be expected since the island is 40km from the nearest land and has a more limited range of geological substrates and available habitats than the mainland.

#### (g) Linyphiids as a proportion of the total catch

Spiders of the family Linyphiidae are characteristic of northern latitudes generally making up a large proportion of the total fauna. Table 1 gives the linyphiid numbers in relation to the total catch at the four main sites for each year. Linyphiids made up over 90% of the catch at both sites A and B while the percentage dropped to just over 70% at the lower sites.

Taking the island as a whole the proportion of linyphiids (53 out of 78 or 68%) is below that for Iceland (70%) but higher than that for Greenland (64%) and much higher than that for the Scottish mainland (53%) or for the UK as a whole (44%).

#### (b) Concluding remarks

This study attempts to contribute to knowledge of spiders of the northern isles. It allows comparisons to be made with previous Fair Isle studies and with results from elsewhere in Shetland. The continuous, long-term nature of the study hopes to shed some detailed light on a number of areas: it relates spider communities both temporally and



spatially to the harsh Fair Isle environment; it reveals high numbers of winter active species, even at the highest and most exposed locations; and gives information of altitude and habitat preferences. The three-year span of data also give first evidence of annual variations.

Fair Isle offers a number of different habitats but it remains almost entirely a harsh northern environment and the spider fauna reflects the fact that in some ways it is more an outpost of the Arctic than an extension of the Scottish mainland.

#### Conclusions

The fauna of Fair Isle is now known to be considerably richer than was previously thought; and there are probably a number of species awaiting discovery. At present there are 32 species recorded elsewhere in Shetland that have yet to be found on the island. Systematic collecting or trapping has yet to be done at the lower altitudes especially in damp areas or under heather. Sea-bird burrows and nests may well harbour previously unrecorded species especially in the summer months when collecting in such places would be difficult to do without undue disturbance to the nesting birds. Additional synanthropic species may occur in and around buildings on the island; Pholcus phalangioides was recently reported from a garage near Sumburgh, and Tegenaria gigantea has been introduced on a number of occasions without apparently becoming established. A specimen of T. gigantea was found on Fair Isle in 1995 but it had arrived in a case of wine! There may be other species established in buildings or in gardens or fields in the island; the ubiquitous Diplocephalus cristatus could be expected to be one of these.

This is the first systematic study of spiders through all seasons in the northern isles. The continuous, long-term nature of the study provides a clearer overall picture than was hitherto available in a number of areas. It relates spider assemblages both temporally and spatially to the harsh Fair Isle environment; it reveals high numbers of winter-active species, even at the highest and most exposed locations; and provides evidence of the altitude and habitat preferences. The three-year span of data gives the first evidence of annual variations.

Comparisons with seasonal data for some of the species has been possible. For winter-active species the patterns are generally similar to those found for the same species in Dorset (Merrett 1969). However for stenochronous species (summer-active) peaks in male activity (taken to indicate the main breeding period), are at least a month or more later in Fair Isle than that reported for Dorset.



From this study it is clear that while Fair Isle offers a number of different habitats, allowing a number of southern species to extend their range, it remains almost entirely a harsh northern environment and the spider fauna largely reflects the fact that in some ways it is more an outpost of the Arctic than an extension of the Scottish mainland.

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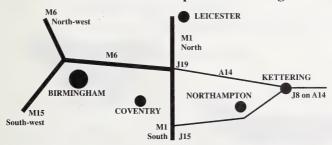
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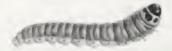
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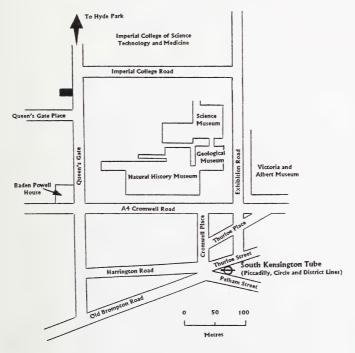




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# Bülletin

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The cover of this issue of the Bulletin shows the Black garden ant Lasius nigeri and the Black bean aphid Aphis fabae. The Black bean aphid is the commonly seen in the garden and referred to as a "blackfly". However, the colour of these insects can be anything from black through to olive-green. The species feeds on plant sap using its piecing and sucking mouthparts. The sap which these and many other aphids feed upon is extremely high in sugars but very low in protein. In order to get enough protein, vast quantities of sap are imbibed and the excess sugar is passed straight through the body. This excretion substance is adored by ants and the Black garden ant can often be seen milking the aphid for a drop of honeydew. The presence of ants gives the aphids some protection against predators and parasites, whilst the ants benefit from a rich food source.

Photo: Nick Holford.

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**April** 1999

#### **Editorial**

The Annual General Meeting and Members' Day is now only a few days away, and I hope that as many of you will attend as possible. The event, held once again at the Natural History Museum in London. The day allows you, not only to look around the museum free of charge, but also gives you the chance to listen to some entertaining talks, chat with other members and to get some help with the identification of species. We also welcome any exhibits that you wish to bring along to the day. All the details regarding the event are at the rear of this issue of the *Bulletin*.

Our other main event of the year, the Annual Exhibition, is gaining momentum already, as you would probably expect for such a large event. We have already had a number of bookings, and if you are interested in booking a table, please contact our Exhibitions and Meetings Secretary who will forward details to you. We have also produced a poster and flyers relating to the event. If you know of somewhere that we could display some copies, please let me know and I will forward some on.

Hope to see you at the AGM and Members' Day.

Wayne

## Discovering Newnham-on-Severn, Gloucestershire: a note on the Brown argus, *Aricia agestis*

by Don McNamara (5537)

6 Fulham Close, Hillingdon-Uxbridge, Middlesex UB10 OSU.

Roger Kemp's article on larval foodplants with particular reference to the Brown argus (*Bulletin* **57**: 225) put me in mind of attempts to find this species in Newnham-on-Severn, Gloucestershire.

I took over my parents' house in 1988 and started to convert a traditional garden, with manicured lawns, into a wildlife and butterfly garden with a meadow replacing the closely-cropped grass.



Having scouted the area to see what's around – in particular the land either side of the railway line at Newnham, the adjacent "waste" land and parts of the nearby Forest of Dean, I intended to put in whatever larval foodplants and butterfly nectar plants that would be needed to attract such local species.

Among other common insects I did find the occasional Brown argus. along the railway land, but couldn't find their traditional foodplant. rock-rose, *Helianthemum nummularium*. At the time, 1988-1989, I was not aware of the possibility of an annual alternative, the cut-leaved cranesbill, *Geranium dissectum*.

The mini-meadow, about the size of a large tennis court, replacing the formerly immaculate lawn, now (1998) disports a variety of wild plants and grasses, most of which occurred without particular help from me – although supplemented by locally-gathered seed.

It now has goodly colonies of Ringlets. *Aphantopus hyperantus*, and Gatekeepers. *Pyronia tithonus*. which seem to be well-established having now occurred for about seven years. Common blues. *Polyommatus icarus*, are plentiful and for six years running, a growing group of Small coppers. *Lycaena phlaes*, fly, continually brooded from late April to October – most satisfying.

But in the summer of 1997 two very fresh Brown arguses appeared in the garden, and four adults in 1998 – no rock rose though.

Until I had read about cut-leaved cranesbill it was a bit of a mystery. As all the land immediately around the garden is residential and although the original insects must have flown in at some time, the butterflies, particularly in 1997, had obviously hatched in my "meadow", and there is no trace of rock-rose in the vicinity – although I now realise that the cranesbill is plentiful in the area, particularly around the edges of gardens (including mine) and the local allotments, possibly because it is a plant "of the disturbed soil". This is not a calcareous area, where rock-rose flourishes, the soil is quite loamy.

The nurture of cut-leaved cranesbill is now part of the "strategy" – and this year I'll supplement it with some rock-rose, possibly wild stock obtained from seed, together with some nursery-bred cultivars. It will be interesting to see if the plants take and whether they will be used by these lovely butterflies.



# The parasitoid *Aleiodes alternator* Nees (Braconidae: Rogadinae) and the pseudohyperparasitoid *Gelis areator* Panzer (Ichneumonidae: Cryptinae) associated with the larva of the Vapourer moth *Orgyia antiqua* L. (Lepidoptera: Lymantriidae)

by Hewett A. Ellis (9940)

16 Southlands, Tynemouth, North Shields NE30 2QS.

#### Introduction

In the previous publication (Ellis, 1998) I illustrated the phenomena of parasitism and pseudohyperparasitoidism by reference to caterpillars of the Grass emerald moth which had been attacked by a gregarious endoparasitoid, the externally formed cocoons of which were subsequently attacked by pseudohyperparasitoids.

The present paper is concerned with a similar situation, but one in which a solitary endoparasitoid completes its entire development and pupates within the caterpillar's skin where, in turn, it may be attacked by a solitary pseudohyperparasitoid. In due course either an adult parasitoid or an adult pseudohyperparasitoid emerges from the mummified remains of the caterpillar.

In the present instance, the primary host was the caterpillar of the Vapourer moth *Orgyia antiqua* L. The well-known caterpillars of the Vapourer moth may be found during the summer months on a wide variety of deciduous trees, shrubs and heather. These pupate within the cocoon and the adults emerge the same year. The wingless female remains on the cocoon and after pairing lays her eggs over its surface, where they remain over winter and hatch the following year.

The present observations relate to six Vapourer moth caterpillars collected in August 1997 and which failed to develop any further and subsequently proved to have been parasitised.

#### Parasitised caterpillars

On 2nd August 1997 I found several immature and mature Vapourer moth caterpillars on the leaves of a blackthorn (*Prunus spinosa*) hedge at Druridge Bay Country Park on the Northumberland coast (NU 273001). I collected three caterpillars on 2nd August and a further three when I revisited the site on 12th August.



None of the caterpillars was observed to feed after collection and remained attached to a leaf or to the sides of the container. One, collected on 2nd August, moulted but immediately reattached itself without feeding. On 15th August a solitary adult parasitoid emerged from this caterpillar and from one other also collected on 2nd August. Identical solitary parasitoids emerged on 16th and 18th August from a further two caterpillars (see Table 1). Each of the four parasitoids had emerged from its host caterpillar by making a large hole in the dorsal surface of the seventh abdominal segment, immediately in front of the "pencil" of hairs which arises from the eighth abdominal segment. The caterpillars now appeared dead and mummified. The parasitoid wing venation was that of a Braconid, subsequently determined by Dr Mark Shaw as *Aleiodes alternator* Nees.

Each of the remaining two caterpillars collected on 12th August gave rise to a solitary adult insect with the wing venation of an Ichneumonid. about eleven days later on 27th August. These were subsequently determined by Drs Mark Shaw and Martin Schwartz as *Gelis areator* Panzer.

| Host caterpillar |                | Insects emerging from caterpillars (date) |  |  |
|------------------|----------------|---|--|--|
| Number           | Date collected | Primary Parasitoid                        | Pseudohyperparasitoid                  |  |
|                  |                | A. alternator                             | G. areator                             |  |
| 1 "              | 2.8.9          | 1 (15.8.97)                               | _                                      |  |
| 2                | 2.8.9          | 1M (15.8.9 <sup>-</sup> )                 | _                                      |  |
| 3                | 2.8.7          | 1F (18.8.97)                              | _                                      |  |
| ±                | 12.8.9         | 1F (10.8.97)                              | -                                      |  |
| Ś                | 12.8.9         | _   | 1M (2 <sup>-</sup> .8.9 <sup>-</sup> ) |  |
| ()               | 12.8.9         | _   | 1M (2 <sup>-</sup> .8.9 <sup>-</sup> ) |  |

**Table 1.** Identity, number and dates of emergence of adult parasitoids and pseudohyperparasitoids from the mummies of six Vapourer moth caterpillars. \*ecdysis in captivity; M = male, F = female.

#### The primary parasitoid Aleiodes alternator

A alternator is a solitary Braconid endoparasitoid which completes its development within the host caterpillar. In the present example this was the caterpillar of the Vapourer moth, but A alternator is a polyphagic parasitoid and may attack a variety of Lepidoptera caterpillars of Lymantriidae (as here). Arctiidae and Lasiocampidae (Shaw & Askew, 1970; Shaw, pers. comm.). The adult female oviposits



in the immature caterpillar and it is interesting to note that one of the present caterpillars underwent an ecdysis whilst under observation.

The behaviour of the primary parasitoid and mode of exit from the caterpillar is in keeping with that described for the Rogadini including the genus *Rogas* (Shaw & Askew, 1976), but it should be noted that *Rogas* is now part of *Aleiodes* (Shaw, *pers. comm.*).

#### The secondary parasitoid Gelis areator

This species is a further example of an Ichneumonid within the subfamily Cryptinae, which attacks the cocoons of Braconidae and Ichneumonidae (Ellis, 1998). Since the original host (Vapourer moth caterpillar) harbouring the primary parasitoids (*A. alternator*) was moribund or dead, then this is an example of pseudohyper-parasitoidism (Shaw & Askew, 1976).

The short interval of about eleven days between the emergence of the primary parasitoids (*A. alternator*) and the pseudohyperparasitoids (*G. areator*) indicates that the latter completes its life-cycle rapidly within the former. A similar rapid life-cycle was observed previously in the case of the closely related *Gelis agilis* which attacked cocoons of the parasitoid *Glyptapantales triangulator* (Ellis, 1998).

#### **Protective devices**

The hairy nature of the Vapourer moth caterpillar might be expected to offer some protection against the unwanted attentions of predatory birds (Chinery, 1989), but clearly does not provide any mechanical protection against the attack of female *A. alternator* parasitoids.

### Effects of parasitism and pseudohyperparasitoidism on the Vapourer moth population

As explained previously (Ellis, 1998) the frequency of parasitisation of the caterpillars collected does not give any true indication of the actual overall degree of parasitisation of the local Vapourer moth population since an unknown number of unaffected caterpillars will have completed their development and pupated normally. The situation is further complicated by the lack of knowledge concerning the extent to which the primary parasitoid population (*A. alternator*) is reduced by the attacks of the pseudohyperparasitoid (*G. areator*).

#### **Summary**

Six caterpillars of the Vapourer moth collected during August 1997 at Druridge Bay, Northumberland, failed to pupate and subsequently were found to have been parasitised by the Braconid *Aleiodes alternator*.



This solitary endoparasitoid completed its life-cycle within the caterpillar and in four caterpillars the adult exited through a hole in the dorsum of the seventh abdominal segment.

In the other two caterpillars the parasitoid within had been attacked and destroyed by a solitary pseudohyperparasitoid, the Ichneumonid *Gelis areator*, which emerged from the mummified caterpillars about eleven days later.

#### Acknowledgement

I wish to thank Dr Mark Shaw, Royal Museum of Scotland. Edinburgh for his continued help and for the determinations of the primary parasitoid and the pseudohyperparasitoid.

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#### **Mysterious Moth**

by Graham Stevens (10417)

Urb Pla De Les Clotxes 11, 46450 Benifayo, Valencia, Spain.

I recently made acquaintance with a Spanish family who moved to this area some years ago from a very small village south of Salamanca. Spain on the border with Portugal. When they learned of my interest in moths and butterflies they related the following story. When they were younger, some twenty years ago, their village was invaded by large brown moths, which descended on the village at night. There were so

many of these moths that the walls of the houses were completely covered. This invasion then carried on for year after year although these days the numbers have decreased dramatically. Upon showing them my book relating to Spanish moths, they had no

hesitation in picking out *Saturnia pyri*. I have never seen this moth in flight, and so I hope to visit their village in the near future.



# The value of Sweetgum (*Liquidambar styraciflua*) as a Saturniid foodplant

by Valerie A. Passoa (????)

602 Jasonway Avenue, Columbus, OH 43124.

Sweetgum is a member of the witch hazel family (Hamamelidaceae). Of the four or five species known, only *Liquidambar styraciflua* L. is found in North and Central America (Elias, 1989). This large forest tree ranges northward into southern Ohio and southern Indiana, westward into Oklahoma and Texas and south to the mountains of Mexico and Central America (Braun, 1989). Sweetgum is characterised by a starshaped, finely-toothed leaf usually composed of five to seven lobes. Leaves are strongly aromatic due to the presence of essential oils (Wylie and Brophy, 1989). Corky outgrowths on the twigs are another unusual feature of this tree. The brown and spinous fruit is round, approximately one to one and a half inches in diameter.

Sweetgum is an important foodplant for saturniids in the wild and in captivity. A variety of genera are reported on this host including:

Actias (Stone, 1991; Tietz, 1972; Tuskes et al., 1996)

Antherina (Stone, 1991)

Argema (Conlan, pers. comm.; Stone 1991)

Automeris (Conlan, pers. comm.)

Caligula (Conlan, pers. comm.)

Callosamia (Stone, 1991; Tietz, 1972)

Citheronia (Stone, 1991; Tietz 1972; Tuskes et al., 1996)

Copaxa (Conlan, pers. comm.)

Eacles (Stone, 1991; Tietz, 1972; Tuskes et al., 1996)

Eriogyna (Gardiner, 1982)

Eupackardia (Conlan, pers. comm.)

Hyalophora (Conlan, pers. comm.; Stone, 1991)

Lemaireia (Stone, 1991)

Opodiphthera (Stone, 1991)

Polythysäna (Stone, 1991)

Samia (Stone, 1991; Tietz, 1972)

Rothschildia (Conlan, pers. comm.; Passoa pers. obv.)

Periphoba (Conlan, pers. comm.)

Saturnia (Conlan, pers. comm.).

Conlan (pers. comm.) suggests that Dirphia, Hylesia and Pseudautomeris may accept sweetgum in captivity. In Texas, the author has observed Callosamia promethea Drury, Citheronia regalis F. and Eacles imperialis Drury eating sweetgum in the field. In Ohio, Actias



*luna* L., *C. promethea* and *C. regalis* feed on sweetgum as well (Passoa, *unpublished data*). The above list illustrates the generic diversity of saturniids that will accept sweetgum in the laboratory; some genera contain highly monophagous species that will not accept this foodplant.

In spite of the extensive literature on saturniids utilising sweetgum, most rearers are not aware of the many advantages this plant has to offer their livestock. Sweetgum produces leaves that are four to seven inches wide and almost as long. This large leaf provides ample food for mature larvae. The glabrous leaves allow neonate larvae to easily reach the surface of the leaf where mandibles can initiate feeding. Lack of hair increases mobility (Young, 1997) and allows access to suitable resting sites.

Cut sweetgum is long-lasting in water. Leaves will retain their viability for upwards of a week at room temperature. When refrigerated, leaf expectancy may be extended to several weeks or more. This quality is a tremendous boon to the rearer. Further, as with any foodplant, wilt is inevitable. Unlike oak (*Quercus* spp.) and cherry (*Prunus* spp.). both common saturniid foodplants, sweetgum wilt is obvious. Oak and cherry leaves do not display visual signs of wilting, instead they slowly dry out, rendering them unfit for larval consumption. Also, at least in Ohio and Texas, it is not difficult to find sweetgum leaves in good condition. Although various diseases including leaf spots, several species of scale and iron chlorosis are reported, sweetgum is an excellent lawn, park or street tree with brilliant yellow-purple-red tones in the autumn (Dirr, 1990).

The value of a lepidopteran foodplant to a breeder depends on practical considerations (how fast does the plant wilt, etc), the availability of proper resting sites for the caterpillar (mechanical defences), and the host's nutritional content. Laboratory studies with two families of moths (Lymantriidae and Saturniidae) suggest that sweetgum is nutritionally comparable to most other trees. Except for the last instar near pupation, Gypsy moth (Lymantria dispar) larvae prefer sweetgum to loblolly pine (Strom and Hain, 1996). Gypsy moth larvae reared solely on sweetgum had higher pupal weights, higher fecundity, and shorter development times compared to those larvae reared on oaks (Quercus spp.), pines (Pinus spp.), red maple (Acer rubrum) or synthetic diet (Barbosa et al., 1983).

In Saturniidae, Nässig and Peigler (1984) reported that *Actias maenas* Doubleday preferred sweetgum and sumac to other plants. Early and late instar sweetgum-reared *C. regalis* showed an intermediate growth rate between persimmon (best) and sumac (worst) (Worth *et al.*, 1979.



1982). Last instar *C. regalis* and *A. luna* reared on sweetgum and black walnut (*Juglans nigra*) had approximately equal relative growth rates and developmental times, even though nitrogen was accumulated faster in walnut (Scriber and Feeny, 1979).

In summary, sweetgum has a water content of 60% and a nitrogen dry weight of 1.39%. This is intermediate between extremes of 51-68% water content and 1-3.6% nitrogen dry weight studied by Scriber and Feeny (1979) in ten common north-eastern United States trees. Although more nutritionally favourable trees exist as saturniid hosts, sweetgum has many practical advantages. For example, although nitrogen accumulation rates were higher in black walnut than sweetgum, black walnut wilts rapidly when cut to almost crispy leaves and has sap that stains clothing. Sweetgum lasts longer in water and therefore is a desirable addition to saturniid rearing programmes, especially when the natural foodplant is unknown.

#### Acknowledgements

I wish to thank May R. Berenbaum and Robert J. Marquis for providing useful reference material. Christopher A. Conlan very generously provided foodplant records. Special thanks to Steven C. Passoa for his encouragement and guidance.

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by Roger Riddington

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Shetland Biological Records Centre was established in 1998 to collate biological records in one of the most important wildlife areas in the British Isles. With the help of Shetland Entomological Group, we aim to create a comprehensive database of entomological records for Shetland. We are very keen to hear from anyone who may have made a trip to Shetland in the past, and who may have potentially interesting and valuable records which we are unaware of. We would also like to encourage anyone planning a visit to Shetland to lodge a copy of any wildlife records with us. Issues such as data ownership, confidentiality etc will be respected as a priority, where appropriate, and all records will be acknowledged.

Finally we wish to contact two people who are believed to have collected information about Shetland's invertebrate populations: Jon Daws from Leicestershire and Neil Marks from Norfolk. If anyone can put us in touch with these two, or if they are readers of the *Bulletin*, we would be delighted to hear from them.

If you can help, or if you would simply like more information about the project, please contact me at the address/e-mail above or alternatively telephone 01595 694688.

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## An annotated list of arachnid species newly recorded for Fair Isle, in their regional context

by J. Edward Milner<sup>1</sup> and N. Riddiford<sup>2</sup> (9388)

References to records from Faroes, Iceland, Greenland, western Fennoscandia are those quoted by Ashmole (1979) from Brandegaard, Holm, Bengtson, Hauge and others unless otherwise stated. Other authors whose records are quoted are Duffey (1955), Surtees (1976), Hillyard (1977), Drummond (1981) for Orkney, Bristowe (1932) for the earliest records from both Orkney and Shetland, and Bengtson & Hauge (1979) for the Faroes; Eskov (1994) for Siberian records of Linyphiids.

The letters after the entry for each species indicate presence in the following northern territories: S = Shetland (mainland); O = Orkney; F = Faroes; I = Iceland; G = Greenland; WF = Western Fennoscandia; NS = Northern Siberia.

Months for males and females refer to Fair Isle findings (all methods of capture) unless otherwise indicated. Months given in *italics* were found to be clearly the peak months.

- \* = new record for Fair Isle
- \*\* = new record for Shetland (and Fair Isle)

#### **Family GNAPHOSIDAE**

Drassodes sp. prob. lapidosus\*

Ashmole (1979) reported a sub-adult male from Shetland. In this study a single sub-adult male was taken in grass near the north end of the island and identified as probably *Drassodes* sp. by Dr Peter Merrett. However there are no records from islands further north. S(?): WF.

Haplodrassus signifer\*

Ashmole (1979) reported two immature spiders probably referable to this species from the Shetland mainland. In this study a number of adult specimens were taken at site C (15m) in dense *Calluna*, and at the top of the Gulley at about 15m asl. Males: June, July. Females: July. S: F, I, G, WF.

Pardosa nigriceps\*

Only a single (male) specimen was taken, in a pitfall trap at site C in July. According to Ashmole its occurrence in Shetland is generally rather local; it was first reported by Bristowe but there are only three other records, all in June or July. S, O: WF.

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#### Xerolycosa miniata\*\*

This is clearly one of the most interesting new records, as it has not previously been recorded north of the Scottish mainland. In this study a single male was taken at site E, and four males were found in The Gulley, all in June 1988, while 26 males were taken at site E in August 1990, WF(?).

#### Alopecosa pulverulenta\*

A number of specimens (all males) were taken at site E and at The Gulley in June and July 1988 and August 1990. There are two records (both immature specimens) for Shetland according to Ashmole where it has occurred up to 290m, while on the Scottish mainland it has been recorded up to 1000m. S, O: F, WF.

#### P. tenuitarsis\*\*

Two females from site F, one in August 1989 and the other in October 1990 were identified as *P. tenuitarsis*. a close relative of *P. piraticus*. This is a new record for Shetland, but the species is very similar to *P. piraticus* and may have been overlooked in the past on Fair Isle and on Shetland. WF(?).

#### Hahnia nava\*\*

Not recorded by Ashmole on Shetland but in this study it was found to be quite common in The Gulley. This appears to be the northernmost record of the species. Males: April-June; females: March, April, August, WS.

#### Family LINYPHIIDAE

#### Walckenaeria antica\*

Ashmole took a single male on the dunes at Quendale in April. In this study *W. antica* was found up to the summit of Ward Hill, and at all the trap sites except F, although in small numbers. Males: September to January; females: June, July, September, OCtober, S. O.: F, WF, NS.

#### W. clavicornis\*

This montane arctic species (which occurs further north as far as Greenland) apparently occurs only above 200m on Fair Isle (where it is fairly common): elsewhere in Shetland the only confirmed records are for 230m upwards. Males: April, May, June, August, September: females: May, July and October. S, O: F, I, G, WF, NS.

#### W. cuspidata\*\*

This species has not been recorded for the mainland of Shetland although it is now known from both Orkney and the Faroes so it is most likely to be present. During this study a single male was taken in The Gulley in September. S, O: F, WF, NS.



#### W. vigilax\*\*

This species has not previously been recorded from any islands north of the Scottish mainland. In this study four individuals were taken in June and July – males from sites A, B and E, and a female from site E. O, WF, NS.

#### Metopobactrus prominulus\*\*

This species has not been recorded on the mainland of Shetland, or further north, but it has been recorded by the author from Orkney (Milner, 1988). In this study six males were taken in June and July at site E. O, WF, NS.

#### Peponocranium ludicrum\*\*

A single male was taken at site E in May and a female in The Gulley in July. O: WF.

#### Trichopterna thorelli\*\*

Not recorded so far from the mainland of Shetland. During this study a number of specimens of both sexes were taken at site E in June and July. O, WF(?).

#### Silometopus elegans\*

This spider occurs in small numbers at all altitudes on Fair Isle; it was one of the few species which was taken in traps at all sites. *S. elegans* has been found at three sites on the mainland of Shetland by Ashmole and the author; females in April and July, and males in September. On Fair Isle both sexes: June to August. S, O, WF, NS.

#### Cnephalocotes obscurus\*\*

Not recorded from the mainland of Shetland although it is known from both Iceland and Greenland, *C. obscurus* was found during this study at site E and in another marshy area at about 150m. Males: June and July; females: June, July and September. S, O, I, G, WF, NS.

#### Tiso vagans\*

Recorded from a number of places on the mainland of Shetland, and also from the Faroes, this species was taken on a number of occasions at The Gulley. Males: June, July, November; females: March, April, September. S, O, F, WF.

#### Moncephalus castaneipes\*

Reported by Ashmole from various sites at low altitudes on the mainland of Shetland, this species is common near the summit of Ward Hill frequently occurring in catches at sites A and B. Males: March to September; females: March to November. S, WF.



#### Lophomma punctatum\*\*

This species was not recorded by Ashmole from Shetland, but the author found a single female at Tingwall in August 1987, and in this study it occurred fairly frequently at site F and once at site E. It was also taken in damp areas up to 160m on Ward Hill. Males: April, May, July. September; females: June, July, September. S, O, WF, NS.

#### Gongylidiellum vivum\*

Ashmole reports a few records from the mainland of Shetland; in this study it occurred fairly frequently at sites E and F and a single individual was taken at site A (215m). Males: June to September and November; females: January, March, April, July, August, September.

#### Erigonella hiemalis\*

Ashmole reports only two records at low altitudes on the mainland of Shetland. In this study three males were taken at site B (200m) in April and May, females were taken at lower altitudes in February and July. S. O, WF.

#### [Diplocephalus cristatus]

A single female that was confirmed as this species has been found elsewhere in Shetland, and a record for Fair Isle previously reported by the writer should be discarded as an error. However, it is known from Orkney, Faroes, Iceland and similar localities in the southern hemisphere. This ubiquitous species is most likely to be present in Fair Isle, but no confirmed specimens have yet been recorded. S. O: F. I. WF.

#### Araeoncus crassiceps\*

Ashmole has reported this species from a number of Shetland localities: in this study two males and one female were taken, at site E in July. S. O. WF.

#### Typhochrestus digitatus\*

Known only from one locality on the mainland of Shetland (both sexes in April), in this study *T. digitatus* occurred at all sites except F, down to about 20m, and was common at site A in particular from December to January. Males: November to March; females: February, March and May. S, O, WF.

#### Drepanotylus uncatus\*

Ashmole reported a single record on the mainland of Shetland from a damp patch of grass and sedge; in this study it was found to be common, sometimes abundant at the site F (wet sphagnum) even though this was at 125m. It was also trapped at site E. *D. uncatus* is at least partly winter-active; most males were taken in winter months; this



may explain Ashmole's paucity of records, and its apparent absence from Orkney. Males: January to May, September to November; females: April to November, January. S, F, I, WF.

#### Leptothrix (Phaulothrix) hardyi\*

Like the last species this is winter-active (as Ashmole points out) and he did not find it in his studies but gives a single record from the Out Skerries. In this study it was found to be fairly common at sites A and C, though strangely was not taken at site B. All records were from September to March with a peak in November-December. S, I, WF.

#### Halorates reprobus\*

This is a widespread species on the shoreline of Shetland, which has also been recorded from Iceland, although not so far from Orkney. On Fair Isle it has been found near the south end on shingle and among tidal debris, and probably occurs at sheltered points on the shoreline elsewhere. Males and females: September. S, I, WF.

#### Agyneta decora\*

Uncommon in Shetland generally which is strange as it was found to be abundant in June and July at sites A and B near the summit of Ward Hill, and occurring less frequently at all the other sites. Males: June to September and November; females: June to September, S, O, F, I, WF.

#### Meioneta mossica\*\*

This species has recently been separated as a new species from *Meioneta saxatilis* (Schikora, 1993). Elsewhere in Shetland "*M. saxatilis*" was recorded once by Ashmole but all recent specimens from Orkney and specimens found in this study at site E (at 70m) proved to be the new species. The specimens were all taken between June and October. S, WF.

#### Centromerus prudens\*

Ashmole recorded this species in April from above 150m on Ronas Hill and Sandness Hill. The only summer records are from Noss (Bristowe 1932) and by Goodier (1974) from 400m on Foula in July. In this study it was found down to almost sea level in The Gulley, but also up to the summit of Ward Hill (site A), with site C being the site where it was most commonly taken. Males: September to November, January; females: September to May.

#### C. dilutis\*\*

Not recorded from the mainland of Shetland, but recorded by Bengtson & Hauge (1979) from Faroes. In this study a single female was taken near the north end of the island in July. F, WF.



#### Centromerita bicolor\*

Elsewhere in Shetland this "facultative montane" species (Ashmole 1979) has only been found in grassy areas at low altitudes. In this study it was taken, sometimes in large numbers, up to the summit of Ward Hill. The largest catch was at site B in February 1991 after the main study period when 134 males and 28 females were taken in a single month's trapping. This is a winter-active species with males taken mostly in February but also in October and December: females: February to May and September to December. S. O. SM: F. I. G. WF. (Bengtson & Hauge reported this species from Faroes, but subsequently corrected this to *C. concinna.*) S, O, F, WF.

#### C. concinna

Not a new record, but by far the most abundant and frequently trapped species in the pitfall catches (making up 43% of the aggregate catch for the four main sites), especially at sites A. B and C; less frequent or abundant at E and F. On the mainland of Shetland it has been recorded in April and in late summer at a few sites including near the summit of Ronas Hill (450M). However, as this study shows, this is a winter-active species with adults being absent in most of the summer months and as nearly all spider records for Shetland are from April or the summer months, its distribution is certainly under-recorded. Its occurrence in the winter months as found in this study is spectacular, producing peaks in the trapping figures considerably greater than the numbers of all species in the summer months. Males: September to April; females: all year but only occasionally in the summer months. S. O, F, WF.

#### Bathyphantes parvulus\*\*

Easily confused with the previous species and probably underrecorded. A few males have been taken from three different sites, all in September, but none in the pitfall traps. WF.

#### Bolyphantes luteolus\*

Ashmole reports that few adults of this species have been found in Shetland. In this study it was found to show the typical pattern of a winter-active species with a peak of numbers in December and January. It was taken at sites B. C and E and by searching (in September) from near sea-level to the summit of Ward Hill. Males: November to March; females: August to March, S. O. F. WF.



#### In praise of ragwort, ivy and rabbits

by Brian O.C. Gardiner (225)

2 Highfield Avenue, Cambridge CB4 2AL.

Watching television on 24h July this year I saw two acts of appaling vandalism perpetrated, or about to be perpetrated by "The Authorities". The first was the great war on ragwort, a very very expensive machine having been developed to simulate manual weeding and "handpull" the plants out of the ground thereby saving the manual labour of so doing and removing the roots. The excuse being that the plant is poisonous. So why am I not dead I ask myself, having handled and waded through many acres of ragwort over the years. Hand weeding does at least leave other vegetation un-touched, nor does it crush everything in its path like this leviathan machine which has the same effect on the ground as any tank. Do these "experts" who panic at what they consider to be a weed not realise that ragwort is either the nectaring or the foodplant of many insects and a pleasant splash of colour by the wayside or in the field. In my experience also it is of erratic appearance, very very abundant one year and then few and far between for a period. Perhaps the appaling weather this summer has suited it. Many years ago I was fortunate in finding a readily available enormous supply of it just when there was the demand from New Zealand for thousands of Cinnabar moths (Tyria jacobaeae) for Cactus control and I was able to breed some 10,000 pupae. Both before and after that year ragwort plants had been and were subsequently few and far between in Cambridge. True, it is poisonous to horses, but it has been with us since the ending of the ice-age and sensible horses are very good at not eating what they do not like. Could it be that the sometimes abundant ragwort is caused by the liberal use of various weedkillers and insecticides to which it is resistant but which have killed off competitors which normally keep it at a much lower level?

On the same day it was announced that rabbits on the South Downs were to be killed using cyanide. Both very cruel and highly dangerous. Having lived on the Downs as a boy, I remember both the abundance of rabbits, the short turf that resulted and the equal abundance of blue butterflies, several species of which are so dependent on the appropriate grazing regime of their habitat which seems to be more suitably done by rabbits rather than farm animals or mowing machines.

Ivy (*Hedera helix*) is very fond of climbing trees and as a result produces a dense winter foliage ideal for harbouring and protecting no end of overwintering insects, and other life. It is also suitable for



nesting birds and I believe the endangered dormouse also uses it. Why, therefore, has it been cut off and allowed to die in some Cambridge woods? Why, because it is dangerous to the trees in the belief that if we have another storm like that of ten years ago it will catch the wind and the tree will be blown down. A specious argument as if the tree is in full leaf (as they were during the Great Storm) a little bit of ivy will not make much of a difference and in winter, being clustered around the trunk will be presenting minimum area to the wind compared to outspread leafy branches. As has recently been pointed out by Paul Waring with regard to the now Schedule 5 protected Fiery clearwing moth (Bembecia chrysidiformis) "Whole colonies have been sprayed with herbicide, cut down or cleared away by land managers." (British Wildlife 9: 325). All for the sake of "tidiness". So much for Schedule 5 protection! I feel that so often these decisions on "conservation measures" and "tidiness" are taken to extremes with a one-sided view when full and open consultation should take place with representatives of all parties who might have an interest and in all disciplines being allowed to take part.

#### Wild-bees

by Ian Rumsey

Morris Green Farm, Morris Green, Sible Hedingham, Halstead, Essex CO9 3LU.

Becoming interested in bees whilst sitting in the garden, then reading F.W.L. Sladen's book *The Humble-bee* you begin to realise what you missed in your early youth and decide not to make the same mistake in your second childhood.

Although I can get birds to nest in my bird boxes and bats in the bat boxes, bees in a bee box was not so simple. Anyway some of the bees were solitary bees then others were flies and then some bees looked like wasps. The one advantage of making a bee box is that every bee you see in the vicinity you watch closely to see if it will take any interest in your box only to find it has a nest of its own elsewhere. In fact you are already a bee-keeper if you did but know.

You end up drilling holes in sheds and garage doors for solitary bees as they will keep inspecting nail holes and pouring honey down plastic flowers

It is difficult, however discreet you may be, to keep such activities a secret. Sooner or later somebody has a nest of bees in their compost heap, under a Wendy house or even in a bird box. This is where the



home-made bee-box comes in handy. Inevitably one day you come across honey bees the two photos (front and side view) refer. This was rather an unknown quantity and let us say the episode was not an unqualified success.



However we did find the wild colony from which this swarm originated and over the subsequent months in the general area of a mile or two met with other swarms and eventually identified five wild colonies of honey bee.

It is common knowledge that the domesticated honey bee is having rather a sad time of it at present and untreated wild colonies should be dying out.



This would not however seem to be the case as three of my five wild colonies still exist and appear to be thriving. The two that have died out were in the roots of trees exposed in the side of a ditch. There was at least a mile between these two locations.

Of the remaining three, one is positioned in the roots of a tree facing the road, the bees always seem to fly across the road and car exhaust fumes would be immediately outside the entrance. The second colony is located in a chimney of an old house. The chimney is no longer in use but I would

think it would still smell strongly of soot. The third colony is in a small domestic water tower and the conditions there would be cold and damp. I suspect there are many more wild bee colonies about than is generally recognised and for some unknown reason they continue to survive not just in my part of Essex but throughout the country as a whole.

Now members of the AES whilst doing their thing with their insects will have from time to time come across a wild bee colony of bees and will know whether they continue to survive and the environment in which they live.

If they would be kind enough to let me know of the continued existance of any such wild colonies of honey bee I would be very much obliged.



#### Put an Earwig in your tank!

by Barry Ottewell (1856)

Crossley's Patch, Chadwell, Melton Mowbray LE14 4QL.

Philip Wilkins' experience (Vol. 57: 98) reminded me of an occasion a few years ago when the family awoke one morning to find that the oil-fired AGA cooker had gone out. Those unfamiliar with this vital appliance should know that this event can be either a minor inconvenience (where did we put the standby electric kettle for a cup of tea?) to a near disaster, according to the culinary programme for the day.

The fuel level gauge on the oil tank showed about four inches of oil, equivalent to about 150 gallons, but a resounding echo when the tank was struck showed the tank itself to be empty. Whilst waiting to be rescued by our oil supplier I dismantled the fuel gauge (a transparent plastic tube approximately 1cm internal diameter protected by an opensided aluminium tube) and allowed the contents to run out into a small can. The obstruction turned out to be the remains – mostly whole – of fourteen earwigs.

The top of the tube has a plastic cap with longitudinal internal flutings allowing air into the tube for the sight level to follow the fuel level in the tank. The gap between these ridges were, I estimate, the absolute minimum that an earwig could negotiate. There was also a double right-angled turn at the top before the insect could enter the tube itself.

Notwithstanding the known tendency of earwigs to creep into narrow spaces, it seemed remarkable to me that they should climb a metal tube and force their way into a narrow plastic and metal space in the face of kerosene vapour to enter a transparent tube when darkness is what one would have expected them to seek. They then either lost their footing on the smooth plastic or became intoxicated by the fumes and ended up pickled in oil.

As a gardener I have never been keen on earwigs but when they come between me and my cup of tea, they are finally beyond the pale!

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# Another view on larval foodplants of the Brown argus (*Aricia agestis*) with regard to its recent expansion in East Norfolk (VC27)

by Francis J.L. Farrow (10191)

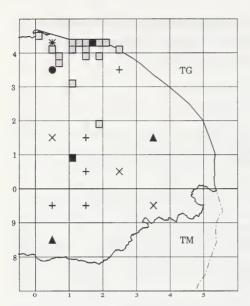
"Heathlands", 6 Havelock Road, Sheringham, Norfolk NR26 8QD.

I read with great interest Mr Kemp's article in the *Bulletin* **57**: 225-7 regarding the importance of foodplants and the Brown argus (*Aricia agestis*) butterfly, and I offer some observations from a more northerly location.

The Brown argus has had a chequered history in Norfolk and up to the late 1980s could be regarded as a scarce insect, particularly in East Norfolk (VC27) The supporting map, Map 1: Brown argus in East Norfolk (VC27), attempts to show this earlier scattered distribution (Emmet & Heath *et al.*, 1990); Heath, 1970). This may not have always been the case though, as Barrett (1874) thought it common about Norwich, Lynn, Hunstanton, Merton, Thetford and Broome. In a review of Norfolk butterflies, Ellis (1984) found it in sandy places near the coast, especially north-west Norfolk and most commonly in breckland in the south of the county where storksbill (*Erodium cicutarium*), one of the known foodplants, flourishes. The above authors all quote West Norfolk (VC28) locations with the exception of Norwich.

By 1988 West Norfolk populations had increased and were found in 57 tetrads (2km squares) covering 18 10km squares, whereas in East Norfolk no records of the Brown argus were reported at all (Hall, 1991). This was the culmination of observations by many dedicated recorders throughout the years 1984-88. The East Norfolk part of the published map, however, included two tetrad recordings, one of the north Norfolk coast and one near Norwich which was in the same 10km square as a pre-1960 10km square record. These two records are designated as black squares on Map 1 and were of observations made in 1989, at the end of the original survey. Since 1989 a colleague, Mr A.W. Humphrey and I, as part of a Butterfly Conservation (Norfolk Branch) survey have been monitoring butterflies principally in north Norfolk, and have found the Brown argus to have extended its range considerably (grey squares on Map 1). Data for the rest of the county has yet to be published but talking to some other recorders it seems that, during 1997 at least, the Brown argus was observed throughout East Norfolk, occupying both its historical 10km squares and possibly other "new" sites to the extent it could be taken as a widespread but local butterfly.





Key to squares
Brown argus

X 10km pre 1940
+ 10km 1950-59
▲ 10km 1960-88
■ 2km 1988
□ 2km 1989-98
(FF/AH Records)

Common Rock-rose
● 10km 1968

X 2km 1998

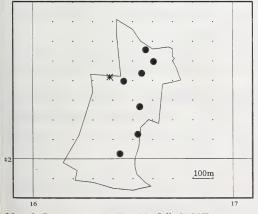
Map 1. Brown argus in East Norfolk (VC27)

The West Norfolk populations occur on the light sandy soils of the brecklands and in north-west Norfolk where storksbill is present. The perennial common rock-rose (Helianthemum nummularium), the main foodplant of the species, is also present in West Norfolk where chalk grassland predominates and no doubt is used by the butterflies in these areas. Some sixteen 10km squares were noted to contain plants of the common rock-rose whereas only two 10km squares are recorded for East Norfolk (Petch & Swann, 1968). Much of East Norfolk is, however, covered by glacial drift and alluvial soils so that the chalk is less extensive close to the surface and where it is found tends to occur as isolated fragmented areas only. During the recent ten year intensive tetrad survey for the new county "Flora" only one tetrad in the northern 10km square of the 1968 "Flora" was found to contain common rockrose (Bull, 1999 pers. comm.). This is an historical site as an even earlier "Flora" mentions the locality along with notes on two locations around Norwich, one of which dates back to 1779 (Nicholson, 1914). The storksbill does occur in heathy and sandy places in East Norfolk but is not as ubiquitous as some of the cranesbills, particularly the dove's-foot cranesbill (Geranium molle) which is a common low growing, often prostrate, plant typical of open fields, of waste and sandy places and herb robert (G. robertianum), a plant generally found in light shade.



Other cranesbills occur in north Norfolk, generally to a lesser extent, such as cut-leaved cranesbill (G. disectum), small-flowered cranesbill (G. pusillum) and hedgerow or mountain cranesbill (G. pyrenaicum). It would seem that the last ten years of Brown argus expansion throughout East Norfolk has been tied to an exclusive use of some of the above cranesbills and in part to storksbill as the larval foodplant.

On a more local level, casual observations from Sheringham and Beeston Regis Commons SSSI (Map 2), the site of the 1989 north Norfolk record of Brown argus, has shown a gradual expansion of the butterfly throughout the area. The SSSI is recognised as a lowland valley mire and supports a great variety of plants (over 400 species). Within the combined Commons 62 acres there are habitats ranging from bog, fen, grassland, heath, scrub and secondary woodland. The Brown argus colonies tend to flank the heath/wetland interfaces, tracksides and the open grassland areas. In the ten years that the butterfly has been present on the site there has only been one observation of egglaying which was in late August on the top side of the cotyledon leaf of dove's-foot cranesbill. The plant was part of an extensive patch of cranesbill growing in full sun alongside a well-walked track. The Commons become progressively more scrubby and wooded towards the south and the only other main Geranium present is herbrobert but so far no Brown argus has been observed on this plant which, as mentioned above, tends to prefer a shaded position. The distribution of the colonies that do persist is shown on Map 2. Each colony tends to be small and generally only single figure numbers are encountered at any one time in a particular area.



Map 2. Brown argus in East Norfolk (VC27)

Kev Brown Argus colony Egg laying observed



The Commons from 1989 have suffered with much of Norfolk through summer drought conditions and since 1987 there has been no considerable snowfall or particularly cold winter. The cranesbill along the tracksides however, have continued to flourish and with the yearround drier conditions the Brown argus, I believe, has also been favoured. Ant species which are known to collect pupae have probably also benefited from the generally less harsh conditions, but these have not been studied. June 1997 was exceptionally wet and may have had a detrimental affect on the late summer generation. This was followed last year by a disastrous April, the wettest since 1920, after which continued a generally cloudy summer. No first generation Brown argus were recorded from the Commons or locally in other suitable habitats and only one or two individuals were seen in August. Inland sites did appear to have a better second generation. The summer was followed by a very wet October and December with January 1999 continuing wet with the result that much standing water remained along the Commons tracks. It is possible we are about to see a reversal in the Brown argus expansion, at least in low-lying habitats where the foodplant is liable to immersion.

From these observations the drier conditions between 1988 and 1997 appeared to have helped the spread of the Brown argus in East Norfolk as the available annual foodplants, particularly dove's-foot cranesbill, had not been detrimentally affected by the prevailing drought. If this return to wetter conditions at critical stages in the life-cycle becomes prolonged then local extinctions are most probable. With no substantial common rock-rose localities within East Norfolk it could take a few years before climatic conditions again allow the Brown argus to fly throughout the vice-county. This coming season may tell us if the apparent 1998 reversal of fortunes is the start of a trend or not.

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#### In Memoriam: Raymond F. Haynes (1916-1997)

by Michael O'Sullivan<sup>1</sup> (7592) and John W. Lavery<sup>2</sup> (7469)

<sup>1</sup> 20 St. James Gardens, Killorglin, Co. Kerry. <sup>2</sup> "Holly Cottage", Ballahadigue, Listowel, Co. Kerry. With the death of Raymond F. Haynes on 3rd June 1997, Irish



entomology lost one of its most knowledgeable practitioners. A native of Surrey, Raymond had been a regular visitor to Ireland, and Killarney in particular, since 1937, with the exception of the period 1939-1945. He moved permanently to Killarney in 1976 and worked tirelessly accumulating an unprecedented knowledge of the

local Lepidoptera. We have both had the privilege of accompanying him on collecting trips to areas as diverse as the Burren and the Inch sandhills and it was a pleasure to share some of his experience and this assisted our learning process immeasurably.

His collection, now housed in the Ulster Museum, Belfast, was precise and inspirational, a joy to behold and many hours were spent, in awe, examining the contents. As a member of the AES for many years, we feel that it would be a fitting tribute that some of his previously unpublished writings be carried by the *Bulletin*.

Raymond F. Haynes is buried at Muckross, Killarney, in the midst of the natural beauty which he made his home some two decades ago and cherished close to his heart. There can be no more suitable final resting place for such an outstanding lepidopterist.

May He Rest In Peace.

The following pages are reproduced as originally written in the late 1960s, with the exception of some minor revisions.

## Extracts from "A Guide to the Lepidoptera of the Killarney District"

by Raymond F. Haynes (834F)

#### Thyatiridae:

Of the nine British species in this attractive group of moths, six have been definitely recorded in Ireland. Two others have a very slender claim to be considered as Irish, one of these appears in Birchall's *Catalogue* as a Killarney insect (see overleaf).



#### Habrosyne pyritoides Hufn. (derasa Linn.)

The Buff arches seems widespread in places where bramble flourishes, but prefers woodlands. From all accounts, it is decidely less common in Ireland than the next species. The first Killarney record was made at the foot of Torc Mountain (Birchall, 1859). I have found larvae in the Earl of Kenmare's demesne near Reen Lodge. The imago has been attracted to m.v. light at Muckross (De Worms & Eldon Ellison, 1957).

#### Thyatira batis Linn.

The Peach blossom is abundantly distributed throughout Ireland and is particularly plentiful here. In my experience, the moth is a skittish visitor to light, usually approaching to within a radius of about six feet and then hiding away in the herbage. In company with *H. pyriotoides*, this species was similarly first recorded from Torc (Birchall, 1859). Other localities include Ross Island, Kenmare demesne and Muckross (De Worms & Eldon Ellison, 1957).

#### Tethea or D.&S.

The Poplar lutestring is local in Ireland, but may usually be found in places where aspen trees and bushes grow freely. This species occurs near the Tunnel on the Kenmare road, where, at the appropriate time, I have found ova freely on aspen leaves.

The Irish race, subsp. *hibernica* Turner, is quite distinct and is fully described on page 101 of the 1961 Edition of Richard South's *The Moths of the British Isles*. After a series of misfortunes, I succeeded in rearing a fine specimen in June 1962 from some larvae found near the Tunnel (see above) the previous summer. The orbicular stigma, which in a normal example forms the 0 of the fancied resemblance to the numerals 80 (always more smudged and obscure in *T. or* than in *T. ocularis* Linn.), is completely absent. The area between the inner and outer lines on the forewings is of a distinct lilac tinge, and the basal area is of the same pleasing coloration. I have also bred specimens from other parts of Ireland, *viz.* Glenfarne, Co. Leitrim and north Donegal. These all have a decided lilac shade on the costal areas of the forewings, and stand out conspicuously in the collection from those bred from Surrey and Kent larvae.

Kane discusses the various characteristics of Irish specimens he had examined (from northern localities) on page 35 of his *Catalogue*. Donovan also has a dissertation about Irish forms of this moth on page 30 of his work.



#### Tetheella fluctuosa Hubn.

The Satin lutestring is a decidedly rarer insect than the proceeding; indeed, it can truly be said that this is one of the good things to be taken at Killarney. Originally recorded from here by Birchall in 1859, it was later noted by Kane from Cromaglan Glen. My few specimens were obtained from Ross Island, Muckross demesne and Torc (Haynes, 1958). The species has also been recorded from Glencar Woods, where a single specimen was beaten out, June 1928 (Foster, 1932).

#### Cymatophorima diluta D.&S.

The Oak lutestring was recorded by Birchall from this district, but no details are given (Birchall, 1856). There have been no subsequent records.

#### Achlya flavicornis Linn.

The Yellow horned was, at one time, held in considerable doubt as an Irish insect, although recorded by Birchall as common. Kane gives a few localities in the Supplement to this *Catalogue* but none in the main part. In July 1929, six larvae were taken at Glencar from which three imagines were bred (Lucas, 1931). Donovan records "larvae numerous" at Killarney in his *Catalogue*. Two larvae were reported on 6th July 1939 from Muckross and a single larva two days later from Caragh (Beirne & Lisney, 1940). In May 1949, E.S.A. Baynes obtained larvae on birch from the Kenmare road (south side of the Upper Lake). Five years later, in May 1954, the same collector beat further larvae, also from the Kenmare road. In June 1956, a few caterpillars were collected at Muckross (De Worms & Eldon Ellison, 1957). No doubt the species is more abundant than formerly supposed, but not often seen owing to its early appearance in the year. Larvae of this moth are not too easy to obtain during daylight hours.

#### Lymantriidae:

#### Orgyia antiqua Linn.

The Vapourer, which is usually so abundant around London and other large towns in Britain, is widespread in Ireland but not nearly so common. I discovered two larvae of this species some years ago, on a sallow bush growing on the north-western shore of the Lower Lake near Bensons Point; also one pupa near Derrycunnihy. Unfortunately, I failed to breed the moth.

Very richly marked specimens were observed on the shore of Lough Acoose in the Glencar district in September 1898 (Scharff & Carpenter, 1899).



#### Calliteara pudibunda Linn.

The Pale tussock is abundant over Ireland and occurs freely in the district both as a larva and imago. I have had some captures from Ross Island and Muckross. Irish specimens seem very well marked and usually darker than English examples.

#### Lymantria dispar Linn.

The Gypsy moth is not a native Irish species. At a time when attempts were made to introduce the moth into Britain. Birchall turned out large numbers of the larvae among *Myrica gale* on the Killarney bogs (Birchall, 1866). No subsequent record of the experiment is available.

#### Lasiocampidae:

#### Malacosoma neustria Linn.

The Lackey, though common in the southern counties of Britain. seems to be rather scarce and erratic in Ireland. Only two examples seem to have been recorded from the Killarney district, both by Charles Watt (Kane).

#### Trichiura crataegi Linn.

The Pale eggar is a scarce Irish species and must be very rare in this district, if indeed it still exists. Birchall's entry in his *Catalogue* reads. "Killarney; but seems a scarce insect". No confirmation of its presence has been forthcoming after all these years, so the moth may possibly be extinct here. On the other hand, this is a species which has a habit of disappearing for several years in a district and then turning up again in large numbers in the larval stage; so perhaps *T. crataegi* may yet reappear here.

Apart from a record from Derry, the moth seldom seems to have been noticed elsewhere in Ireland; but E.S.A. Baynes has reported it in recent years from the Burren of Co. Clare.

#### Poecilocampa populi Linn.

The December moth is well distributed and fairly common generally, throughout Ireland. I have beaten larvae on occasions from the Muckross demesne, Ross Island and Bunrowan (adjacent to the Race Course).

#### Lasiocampa quercus Linn.

The Oak eggar is widespread and usually met with over extensive stretches of heathery ground in many parts of the country. Apparently the var. *callumae* Palmer is, to all intents and purposes, the only one known: although three instances of the type have been recorded in the past.



Various writers have made reference to the occurrence of *L. quercus* at Killarney from time to time. I found a full grown caterpillar on the lower slopes of Mangerton Mountain during August 1960. (First record, Birchall, 1859).

#### Macrothylacia rubi Linn.

The Fox moth is another common, moorland species in Ireland. It occurs freely in the larval stage in suitable areas throughout the Killarney district, especially on the hillsides overlooking the Long Range. The insect has also been recorded from Caragh (Foster, 1932).

#### Euthrix potatoria Linn.

The Drinker is widely distributed but somewhat local in Ireland. Donovan, in his *Catalogue*, reports larvae and pupae as common at Killarney. This has not been my own experience as I have only found solitary larvae on two occasions at Lough Looscanaught and Tomies Mountain slope.

#### Saturniidae:

#### Pavonia pavonia Linn.

The Emperor is fairly common in the wilder parts of the district in heathery ground. I have seen the moth flying over the lower slopes of Tomies Mountain.

The insect was originally discovered here by Birchall (Birchall, 1859), who bred larvae found feeding on *Myrica gale* and reported that the resultant adults were generally lighter in colour than ordinary English specimens, with the central patch considerably larger (Birchall, 1863).

#### Drepanidae:

The hook-tips are represented in Ireland by three species; so far, only two have been noted from Killarney.

#### Drepana falcataria Linn.

The Pebble hook-tip, although usually found in the same districts as *F. lacertinaria*, seems to be a very much scarcer insect in Ireland than the nest species. Birchall gives, in his *Catalogue*, "Common – Kerry", an obvious shot in the dark. Kane regards it as scarce; Donovan mentions one for Killarney. I have not taken the insect here.

#### Falcaria lacertinaria Linn.

The Scalloped hook-tip is common in the birch woods and coppices all over the Killarney district, in suitable habitats. I have taken this species



on Ross Island, at Dinis, and on the Kenmare road near the Tower Lodge. The moth was found abundantly near Caragh, in June 1912 (Foster, 1932).

#### Nolidae:

This group of small moths is extremely poorly represented in Ireland and there seems little doubt that there is but one native species, namely:

#### Nola confusalis H.-S.

The Least black arches is widespread over Ireland but is probably largely overlooked as it is not often obtained in large numbers. The imago however, will sometimes visit light attractions. I have specimens from Ross Island and near the Torc Waterfall.

#### Meganola strigula D.&S.

The Small black arches was recorded by Birchall in 1859 as a Killarney insect. Kane ignores this completely and almost certainly a case of mistaken identity must have arisen with *N. confusalis*, as the species are so similar in appearance.

#### Arctiidae:

A good proportion of the British species of this family occur in Ireland and most are widespread and moderately common. Almost without exception, all the species which are found in Ireland have been seen in this district.

#### Atolmis rubricollis Linn.

The Red-necked footman occurs widely in the southern counties of Ireland. E.F.H. Bullock has had this "footman" from the Flesk Bridge area and its presence has been detected on the Muskross Peninsula. 3rd July 1956 (De Worms & Eldon Ellison, 1957).

#### Nudaria mundana Linn.

The Muslin footman is a common Irish species, found especially in the north and west. I seem to have largely overlooked this small, frail looking insect, as I have but two Killarney specimens. The first was taken at Muckross in July 1939; the second was bred from a caterpillar which I managed to beat out of a clump of heather on the Kenmare road (not far from Five Mile Bridge) in May 1963. This species is, apparently, found freely near Caragh Lake (Bouskell, 1905).

#### Lithosia quadra Linn.

The Four-spotted footman is a very local Irish moth, but is well established around the Killarney area and, in most years, is quite



abundant. For a change, Birchall does not seem to have recorded this species here; a surprising fact in view of the obtrusive habits of this insect. Unlike its uncertain status in Britain, *L. quadra* appears well able to maintain itself permanently here, and does not depend on immigration to augment the local population. The species is perhaps not quite so numerous in this district as it was about twenty years ago.

Larvae may be beaten freely from trees and bushes well festooned with lichens, and often may be spotted resting on tree trunks which are coated with similar lichenous growth.

The first mention of Killarney as a habitat for this "footman" appeared in the Supplementary List of Kane's *Catalogue*. Long after, the moth was reported "very common at light" at Flesk (Beirne, 1938); it has also been taken in Tomies Wood (Beirne, 1944). Places where I have collected larvae include The Deer Park, Ross Island, Kenmare demesne, Cahernane, Muckross demesne and Derrycunnihy.

The caterpillar is a notorious cannibal and should be reared singly on dried lettuce leaves; the pupa should, on no account, be dislodged from its flimsy cocoon or the resulting imago will most likely be deformed.

#### Eilema depressa (prev. E. deplana)

The Buff footman is described by Donovan as "very rare" and, apparently, all the Irish records noted so far, emanate from Kerry. The form ab. *ochreola* Hubn. has been taken by Donovan himself. Kane notes one Killarney specimen in the Addenda to his *Catalogue*.

On 26th July 1936, an example of ab. *unicolor* Bankes was caught among phragmites on the shores of Lough Leane (Beirne, 1938; Edelsten, 1938). A year later, about a dozen specimens were taken by B.P. Beirne at various places including Muckross, Flesk and the Kenmare demesne; amongst these were several ab. *unicolor* (Edelsten, 1938). Of nine specimens captured at light at Torc between 8th-10th July 1939, all except one were of the form ab. *unicolor* (Beirne & Lisney, 1940). B.P. Beirne later observed the moth in Tomies Wood and Cahernane during the years 1940-1943; all examples were ab. *unicolor* (Beirne, 1944).

My own specimens were bred ex-larvae beaten from lichens growing on trees in the Muckross demesne, near the Abbey ruins.

#### Eilema sororcula Hufn.

The Orange footman was recorded by Birchall as "abundant in Killarney" (Birchall, 1866), but Donovan regards the entry with extreme doubt. I imagine that Birchall mistook *E. deplana* for this species; especially as he omits any reference to it in his *Catalogue*.



#### Tyria jacobaeae Linn.

The Cinnabar is usually a conspicuous insect wherever ragwort flourishes – it certainly occurs with moderate abundance here in suitable spots (Wallace, 1859). I have seen larvae in the Muckross demesne.

#### Spilosoma lubricipeda Linn. (menthastri D.&S.)

The White ermine is extremely common all over the country and is very frequent in the bogs and woodlands. When using any form of light as an attraction, the moth is usually a perfect pest. Irish specimens tend to have the white of the forewings tinged with an ochreous hue, otherwise no great variation has been noted.

#### S. luteum Hufn.

The Buff ermine moth is another very common Irish moth, found here in plenty; it is perhaps slightly less abundant than the preceding species and does not visit light in quite such large numbers.

#### Diaphora mendica Clerck.

The Muslin ermine is represented in Ireland to all intents and purposes by the form var. *rustica* Hubn., in which the normal dusky brown coloration of the male is replaced by the dimorphic form of creamy white. The normal type male, however, has been recorded by Kane from Clonbrock and Co. Clare. Unfortunately, I have never seen the moth around Killarney but Kane mentions the locality in the Supplement to his *Catalogue*.

For a full account and discussion of the various forms of *C. mendica* captured in Ireland, reference should be made to:

- (a) Kane's Catalogue, p.27.
- (b) Donovan's Catalogue, p.21.

#### Diacrisia sannio Linn.

The Clouded buff is widespread in Ireland, though somewhat local. It is chiefly a denizen of the bogs where the grass is long and difficult to penetrate. The earliest Killarney record is that of Birchall in 1859. Places in the district where it can be obtained include the Muckross Peninsula and in the rough waterlogged fields near Derrycunnihy. Irish specimens of the first brood are decidedly larger and more brightly coloured than their English counterparts. The species has also been taken in the Caragh Lake region (Bouskell, 1905).

#### Phragmatobia fuliginosa Linn.

The Ruby tiger is another common species and found in most parts of Ireland; I regret that I have not noticed it in the Killarney district. Kane



recorded it from Kerry. C.G.M. De Worms and R. Eldon Ellison include this moth in their list of species taken here during June and July 1956 (De Worms & Eldon Ellison, 1957).

#### Parasemia plantaginis Linn.

The Wood tiger is regarded by both Kane and Donovan as "common on bogs and mountains". Here again, I greatly regret never having seen the insect in the district, but Kane gives Killarney and McGillycuddy's Reeks in his *Catalogue*. There have been no recorded instances anywhere in Ireland of the Scottish form var. *bospita* Schiff.

#### Arctia caja Linn.

The Garden tiger is a common and familiar moth in most parts of Ireland, especially near the coast. I have not met with it personally around Killarney, but E.F.H. Bullock has a series in his collection, mostly taken in his grounds in the vicinity of Flesk Bridge.

#### Zygaenidae:

#### Zygaena filipendulae Linn.

The Six-spot burnet is found commonly throughout Ireland, but broadly speaking, I have found the insect to be more addicted to littoral areas than inland. The moth occurs in the Killarney district and E.S.A. Baynes has informed me that he found it moderately common at Muckross in July 1957. E.F.H. Bullock has a series, taken in his extensive fields at Flesk.

#### Adscita statices Linn.

The Forester is local in Ireland, but usually frequent where found. I have taken this small green moth occasionally around Killarney. In June 1948, I collected a short series from the Muckross demesne; also from a stretch of grass verge on the roadside between the Milltown Crossroads and Kate Kearney's Cottage near the Laune bridge. In addition, the same year, I also saw a few specimens flying near the river Flesk in E.F.H. Bullock's grounds.

#### Sesiidae:

#### Synanthedon scoliaeformis Borkh.

The Welsh clearwing has a very restricted range in Ireland and is apparently confined to Killarney and the Kenmare district and nowhere else in the country. The presence of *S. scoliaeformis* was suspected by Birchall (1866) in Cromaglan Glen, owing to evidence of larval workings in the birch trees, but he did not see any adults. Some twenty years afterwards, Kane also noted workings but saw no imagines. However, a note in the Supplement to his *Catalogue* records that



eventually Kane took "three imagines at Killarney, as well as the larvae both there and near Kenmare". This "clearwing" has since been taken by other entomologists, as follows: H.C. Huggins bred a specimen in July 1914 from a larva dug out of birch: a pair at rest on a birch trunk near the Long Range was found on "th July 1939 (Beirne & Lisney, 1940); and E.S.A. Baynes has informed me of three newly emerged examples he took in July 1947.

The chief habitat of this insect in the Killarney district is along the main Kenmare road, extending approximately from the foot of Torc Mountain to Tower Lodge, embracing Cromaglan Glen and the area to the east of the Long Range. I have also found workings in trees oddly elsewhere – near Dinis Cottage and Torc Glen, etc. Owing to the elusive habits of the moth, the adults are seldom seen but evidence of the larvae is very manifest upon an examination of old birch trees. Scarcely any fair sized trees can be found where there are no telltale marks of larval borings, past and present. By far and away the surest method of obtaining good specimens is to dig out the pupae, but a good deal of patience is necessary and the going is not easy. For an account of how to treat pupae in confinement, reference should be made to my article "The Welsh clearwing in Ireland" (*Bull. amat. Ent. Soc.* 17: 1-2).

#### S. myopaeformis Borkh.

The Red-belted clearwing is a dubious resident of Ireland: Birchall recorded the species for Dublin and Cork. but apparently no confirmation has ever been forthcoming. Kane includes the insect in the Supplementary List at the end of his *Catalogue*, giving as localities Clonbrock and Killarney (W. Salvage). There have been no recent records and confirmation is necessary before this "clearwing" can be given a permanent footing on the Irish list.

#### S. culiciformis Linn.

The Large red-belted clearwing was recorded for Killarney by Birchall in the Supplementary List at the end of his *Catalogue* (Birchall, 1860), but Donovan regards the occurrence of this "clearwing" in Ireland as "very doubtful".

#### S. formicaeformis Esp.

Red-tipped clearwing. As larvae and pupae of this moth have been found in stunted sallows in wild exposed places near Kenmare by L.A.E. Sabine and a fine series bred (see Donovan's *Catalogue*, p.17), it is highly probable that this species occurs also in the Killarney district and I have great hopes of discovering it here one year. Imagines have also been bred by T. Greer from the Kenmare area.



The family Psychidae which is placed immediately following Sesiidae in I.R.P. Heslop's present list, is usually considered among the so-called microlepidoptera and, for the purposes of this Guide, I have transposed the position of this group to the beginning of the section dealing with the "micros".

#### Cossidae:

#### Cossus cossus Linn.

The Goat moth. This destructive species, although very widespread and sometimes common in Britain, seems much scarcer in Ireland and records indicate that the moth only inhabits the southern half of the country. I cannot help feeling, however, that it may be largely overlooked and probably more abundant than revealed by records.

I can find only one reference to the occurrence of the insect in this district: in July 1939, trees which had been attacked by the larvae of *C. cossus* were noted at Cahernane, the Long Range and Muckross (Beirne & Lisney, 1940).

#### Hepialidae:

#### Hepialus bumili Linn.

The Ghost moth is ubiquitously common in Ireland and doubtless occurs freely in this district. However, I have been able to discover only one published record, *viz*, De Worms and Eldon Ellison, 1957.

#### H. fusconebuliosa DeG.

Map-winged swift. This species is fairly common and widespread over the island in areas where bracken grows; although according to Kane, it is somewhat local. The reddish-brown var. *galicus* Led. is also found and is said to be frequent. The only published record I have found is that of Birchall (1859), who captured the moth near Torc Waterfall. E.S.A. Baynes informed me that he took a few at dusk, 5th June 1948, on the Muckross road near the Middle Lake.

#### H. lupulinus Linn.

Common swift. Although so abundant in England, this "swift" is apparently far less frequent in Ireland and, from all accounts, is distinctly local. Birchall's reckless statement "common everywhere" must be discounted. A "good specimen" was taken near Muckross, 29th May 1915 and "a few others seen" (Bonaparte-Wyse, 1916); I can find no other printed evidence of its presence in Killarney.



H. hecta Linn.

The Gold swift is a common Irish species occurring amongst bracken and was an early discovery at Killarney, when Birchall found it near Torc Waterfall (Birchall, 1859; 1865). Later records include Dillon (1898) and Foster (1932), who found it at Glencar in 1928.

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# The Plain tiger, *Danaus chrysippus* – the 21st butterfly breeding in Malta

by Aldo Catanid (7680)

"Zerniq", Plot 135, Triq-il-Mediterran, Pembroke St. Julians, STJ07, Malta.

Since 1923, the *D. chrysippus* has been recorded as a migrant to the Maltese Islands. Most sightings have been recorded in May and from September to November. Migration of the Plain tiger butterfly is influenced by weather conditions, especially temperature and wind directions. Southern winds and a temperature around 23°C generally coincide with such migrations. The late Mr A. Valletta and myself managed to breed the species in captivity from wild-caught females, but the breeding of this butterfly in the wild had never been recorded before in Malta.

Its favourite foodplants are *A. curassavica* and *A. fruticosus*. These are not native to Malta and my attempts to introduce them in the wild failed because of the scorching hot summer months. The ideal habitat for these plants are river banks and water courses. My aim was to create a home for this very much welcomed visitor. Luckily the ornamental *A. fruticosus* with its inflated seed pods is very attractive and still survives in some public gardens. This plant has been grown for some years at the gardens at Birkirkara, Msida and Sliema.

In October 1994, I was walking with my fiancée, Moira, in a public garden situated close to the coast road of Sliema. I noticed that the top



parts of a big bush of *A. fruticosus* were all stripped of leaves and flowers. On a closer look I could not believe my eyes – larvae of the *D. chrysippus* were feeding. I had discovered that this visitor from North Africa had found a good habitat in Malta where to breed.

Three years have passed from that day and the sightings of the *D. chrysippus* this year have been quite frequent. During October and November the weather was very favourable for butterflies and most of the species were still on the wing. On the 30th October 1997, my father was walking along the paths of a public garden at Msida. On a flowering bush of white flowers he saw five *D. chrysippus* butterflies sipping nectar, flying and chasing each other. He also collected for me some full grown larvae which he found on *A. fruticosus*. I was much surprised by this very goods news. The *D. chrysippus* had done it again!

The following morning I headed straight to Msida garden. I counted no less than 20 specimens fluttering about on the flowers. *A. fruticosus* was teeming with eggs and hundreds of larvae in different instar stages. Although this public garden is on a traffic artery that leads to the capital Valletta, I could not resist unfolding my fourfold and catching a few specimens for breeding.

This discovery confirmed my earlier breeding record of *chrysippus*. However, to date the Plain tiger has only been recorded breeding in public gardens on cultivated *Asclepidiaceae*. The chances of it establishing itself permanently here depends largely on its ability to utilise alternative foodplants. The *Asclepidiaceae* genus in Malta is represented by the *Periploca lavigata*, and unfortunately larvae of the *D. chrysippus* do not feed on it.

#### Obituary - Mike Harvey

Members will be sorry to hear of the sad death, this January, of Mike Harvey. Any of you who regularly attended the AES Exhibition at Kempton Park and the Leicester/Kettering Fairs will remember him well. It was not only for his exceptionally fine butterfly specimens, most of which were lovingly bred and reared in captivity, but mostly for him the person.

Mike's dry sense of humour and passion for entomology meant for memorable conversations. On occasions this may have been punctuated by a pint of quality ale! The word quality was perhaps a main feature of Mike's personality. He loved quality in all things, particularly where butterflies were concerned. We shall miss you very much.

"How to measure a season against the calendar of you absence."



### Mounting Coccinellidae for the cabinet

by Keith C. Lewis (3680)

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Any coleopterist who has set the family Coccinellidae or similar shaped beetles will have experienced difficulty in extending the legs while at the same time stopping the beetle from shooting off in all directions on the mounting board. Having tried a number of methods, including plasticine and blue-tack which did not work because the beetle became stuck to the surface, I devised the simple method as illustrated in Figure 1.

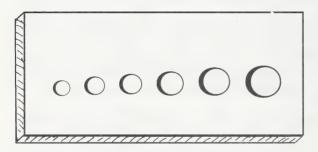


Figure 1



Figure 2

Take a piece of 1/8 white card, three inches by two inches, and use a leather punch to make a number of graduated holes in the card. The beetle can then be held securely while extending the legs and the antennae. When this has been achieved a small amount of mounting glue (water soluble) is brushed on to the mounting card. Holding the card with a pair of tweezers the card is brought into contact with the beetle which will adhere to the mounting card surface and can then be lifted away (Figure 2). I don't expect that this method is original but I hope it will help, especially our younger members.



#### The March of the Fire Ant in the United States

by Keith C. Lewis (3680)

108 Park View Road, Welling, Kent DA16 1SJ E-mail: GKC@emailpost.freeserve.co.uk

The *Daily Telegraph* newspaper of 16th December 1998 printed a news item concerning a species of fire ant whose march from its traditional home in South America is now spreading north into the southern states of North America. Unfortunately, the news item by Phillip Delves Broughton of New York did not identify the species. It was reported that many sick and elderly people in the southern states of America had been killed when the ants swarmed over their victim. Damage to electrical equipment and crops was also recorded. Mr Delves Broughton goes on to say that the fire ant now heading north is a mutant strain from that found in Brazil and Florida that can survive the cold winters of the north.

It was a coincidence that only two days before the report in the paper, I had just finished reading the account of the journey by Henry Walter Bates in his book *The Naturalist on the River Amazons* in which he records his experiences with the fire ant. Although Bates names the ants found at Aveyros and Tapajos as being the same *Myrmica saevissima* it crossed my mind that he was in fact writing about two different ants.

The diary compiled by Henry Walter Bates, now housed in the library of the Natural History Museum, London, is a record of his travels up the River Amazon and its many tributaries. These notes were later used in his book The Naturalist on the River Amazons. The exploration of this region commenced in April 1848 and ended, due to ill health, in June 1859. Bates' first recorded encounter with the fire ant was at the little settlement of Altar do Chao (Altar of the ground, or Earth altar). The houses in the village, he writes, swarmed with fire ants (formiga de fogo), the species being identified as M. saevissima. During his voyage up the Tapajos, he noted the dead and dying bodies of the fire ant that were heaped up in a line, an inch or two in height and breadth, the line continuing without interruption for miles at the edge of water. The countless millions were probably cast into the river by a sudden squall the night before. During his stay at Aveyros, which he called the headquarters of the fire ant (although most of the town of Aveyros was deserted a few years before his visit due to this little tormentor), he found them only on sandy soils in open places. They seemed to thrive most in the neighbourhood of the few remaining houses, and were



never found by Bates to occur in the shades of the forest. He also found them in other places along the banks of the Amazon, but the species were not common on the main river at the time. He also noted that the sting of those species encountered at Aveyros was not so virulent as that of the species found on the banks of the Tapajos; the former was not known to attack man. Therefore it would seem most likely that Bates may have encountered two species of fire ant and those found at Tapajos are the ones that are now spreading north in the southern states of America. Bates writes that the Tapajos species is smaller and of a shining reddish colour, not greatly differing from the common ant. M. rubra that is found in the British Isles, except that the pain and irritation caused by the sting is far greater. The entrances to the subterranean galleries have little sandy domes (as those reported in the Daily Telegraph). This species seem to attack people out of sheer malice, and if we stood in the street for only a few moments, even at a distance from their nests, we were sure to be overrun and punished severely. It was found that the moment the ants came in contact with one's flesh, they secured themselves with their jaws, doubled up their tails, and stung with all their might. The inhabitants of Tapajos declared that the fire ant was unknown before the disorders of 1835-1836, and the natives in that area believed that the ants had sprung up from the blood of the slaughtered Cabanas or rebels. Bates believed the increase of the fire ant since that time was the depopulation of the villages and the growth of low herbage in a previously cleared and well-kept village. It was found that the only way to stop ants from destroying clothing and food was to suspend the items from the rafters, with cords soaked in copaüba balsam; cords of hammocks were also smeared with the same to prevent ants paying sleepers a night-time visit.

#### **DIARY DATES**

#### Sunday 9th May

Entomological Livestock Group Spring Entomological Fair.

Pattishall Village Hall, Towcester, Northamptonshire. Doors open 12-4pm. Admission £1.50 Adults; 75p Children. See advert in *Bulletin* for more details.

#### Monday 10th May

Wimbledon Beekeepers Association.

Bees and Other Insects in your garden – a talk by Andrew Halstead Morden Hall Medical Centre, 19:30h, admission free I: Norman Chapman 0181 640 0030

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Membership details can be found in the front of this Bulletin.



#### A VALUABLE REPRINT FROM THE AMATEUR ENTOMOLOGISTS' SOCIETY

## PRACTICAL HINTS FOR THE FIELD LEPIDOPTERIST by J.W.Tutt

Written in three parts at the turn of the century, this book has been reprinted because it still represents the most comprehensive field guide covering both macro and microlepidoptera. Parts I to III all give a month by month guide to which species and stages to look for and how to find them. Part III also contains an extensive biological account of the early stages and how to keep, rear and describe them. 422 pages, Hardback. (Reprinted 1994). A separate supplement has been prepared which cross-references old to current scientific names and the English names of the species covered. Total price only £21.00.

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| Host plants of British Beetles (24 pages) £2.00                              |
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All the above publications sent post free to U.K. addresses. Outside U.K. please add 10% to order value for postage by surface mail. For postage by airmail outside Europe please add 30% to order value.

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# An Exciting new publication from The Amateur Entomologists' Society

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by Paul D. Brock

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#### The **Amateur Entomologists**' Society

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### 1999 AGM & Members' Day

### Saturday 24th April 1999 The Palaeontology Demonstration Room The Natural History Museum, London

PROGRAMME OF EVENTS (Bug Club events in italics)

10:00 Museum Opens - meeting room opens at 10:30 for coffee

11:00 Welcoming Address

Norman Chapman - MANAGING HONEY BEES 11:05

12:05 **Annual General Meeting** 

12:30 Lunch

13:30 Darren Mann - ENTOMOLOGISING IN AFRICA Bug Club Creepy Crawlies Gallery Quiz (until 15:00) 14:30

Martin Harvey - HOW TO CONSERVE INVERTEBRATES

15:00

15:15 Nick Holford - A REVIEW OF BRITISH BEETLES

Bug Club Bug Hunt in the NHM Wildlife Garden

16:15 Tour of the Entomology Department The Museum remains open until 17:50

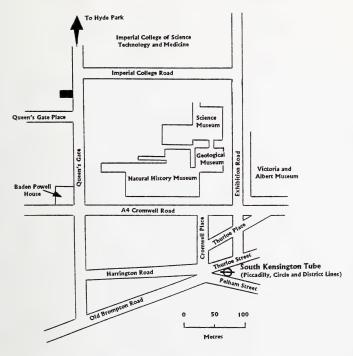
On arriving at the museum, please report to the Life Galleries Reception area (to the right of the entrance kiosks), where you will be asked to sign in. The Museum staff will then direct you to the venue, which is situated at the far end of Gallery 30. The Museum opens at 10am. Members are encouraged to bring along exhibits to the meeting and bring along any specimens for help with identifications. AES Publications will also be in attendance.



The Natural History Museum is located in South Kensington, London. There is limited parking available around the area and it is strongly advised that public transport is used. South Kensington tube station is located 5 minutes from the Museum and is served by Circle, District and Piccadilly line trains. Further information can be obtained from London Travel Information on 0171 222 1234.

# AMATEUR ENTOMOLOGISTS' SOCIETY AGM AND MEMBERS' DAY 1999

### **HOW TO GET THERE**



#### Natural History Museum, Cromwell Road, London

#### Saturday 24th April 1999

By Tube:

The Circle, District and Piccadilly Lines serve South Kensington Station which is a four minute walk from the Museum.

The meeting will commence at 11am in the Palaeontology Demonstration Room, at the far end of Gallery 30. Maps of the Museum will be available upon entry.

#### **ENTRY TO MUSEUM**

The Museum opens at 10am. Entry is free. To gain entry to the meeting, visitors should enter the Life Galleries Entrance on Cromwell Road, and report to reception where you will be booked in.



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**April 1999** 

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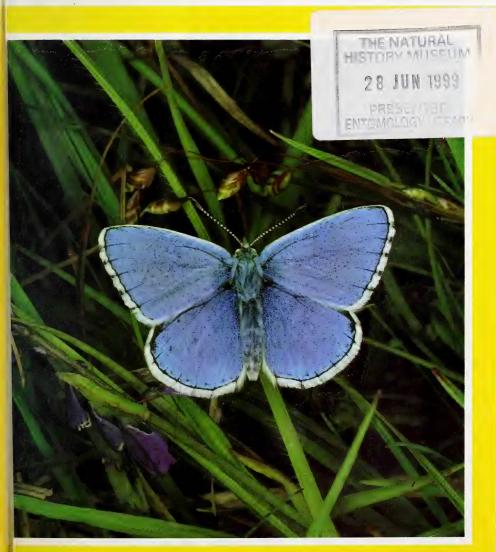
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# Bulletin

of the Amateur Entomologists' Society

Volume 58 • Number 424

lune 1999



SSN 0266-836X

Editor: Wayne Jarvis BSc



#### The AES • P.O. Box 8774 • London • SW7 5ZG



http://www.theaes.org

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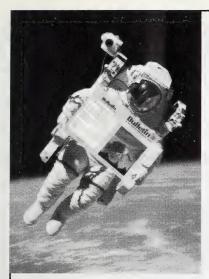
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- The British species of Monochroa, Chrysoesthia. . etc (Lep.: Gelechiidae), by P. Sokoloff & E. Bradford, 8pp, 1 col. plate, £2.50. Br. J. Ent. Nat. Hist. 1993; 6: 36-44.
- The British Epermeniidae (Lep.) by H.C.J. Godfray and P.H. Sterling plus the British species of Caryocolum (Lep.: Gelechiidae) by P. Huemer, together 20pp, many figs, 1 col. plate, £3.50. Br. J. Ent. Nat. Hist. 1993; 6: 141-160.
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wings. Most females show some blue colouration close to the body. Both sexes have pale brown undersides with black spots and a row of orange crescents. The adults fly from May through to September, and there are usually two broods per year. The caterpillars, which are deep green with yellow lines along the back and sides is attended at all times by ants. The main

The Adonis blue butterfly (Lysandra bellargus) is found throughout Europe (except the north) on chalk and limestone hills up to 2000m. In the British Isles it is found only in small

isolated colonies in the south of

The male (pictured) is a brilliant sky blue with fine black edges and a broad white fringe, whereas the female is a dark brown with a row of orange crescents near the outer edges of the

England.

foodplant for this species is the Horseshoe vetch (Hippocrepsis comosa).

Photo: Nick Holford

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June 1999

### Reports of the Society 1998

#### Report of Council 1998

Membership of the Society increased slightly during the year to 1772 as of 31st December 1998. It is now pleasing to see that 215 members are Bug Club members and a further 38 are classified as Juvenile members. This equates to almost 15% of our membership – a figure only dreamed of a few years ago. This membership has however required heavy investment and needs to be sustained at a higher level still if it is not to cause a major burden upon the Society's finances. Our remaining membership comprises 1266 Ordinary members, 125 Family members, 59 Life, 36 Associate, 18 Complimentary and 15 Exchange. Within these figures we are pleased to greet our 106 Overseas members from 31 different countries.

During 1998, Council met at Baden Powell House in South Kensington on four occasions. The year saw us lose Darren Mann from Council due to work commitments, but saw us gain Don McNamara, and he immediately became involved by becoming one of the Society's two JCCBI Representatives. In addition, the AGM and Members' Day was held for the first time at the Natural History Museum, and was the best attended AGM for many years. We hope that we will be able to increase attendees still further in the future by arranging more "exclusive" days. The other main event of the year was the Annual Exhibition. After fears concerning the increasing cost of the venue at Kempton Park, the event proved to be highly successful and was one of the best ever held. Thanks must go to all those who helped on the day and in particular to those who rose at the crack of dawn for a 6am start to help set-up the hall. The increasing Junior membership was noted at the exhibition too, with the Sir Eric Ansorge Award being awarded for the first time in a number of years to the best Junior exhibit. Two awards were made, such was the high standard. James Rawles' general insect display and Alexander Gardiner's pond study were chosen by the judging panel.

The Society was inundated with requests for the Invertebrate Conservation Slide Pack, produced in conjunction with English Nature.



After a very slow start to sales, a brief mention in the English Nature magazine saw most of the copies sold within a few days. A reprint of the set is currently in progress.

The *Bulletin* and the newly named *AES Bug Club Magazine* continued to be published bi-monthly, albeit with only three issues containing colour due to lack of finances. *Invertebrate Conservation News* also appeared in the *Bulletin* on three occasions during the year. No other publications were produced during the year.

Finally, it is with regret that we announce the deaths of the following members during 1998: Mr R. Alderton (10633), Mrs G. Chapman (6539), Mr A. Cleverly (7265), Kapt R. Dahlby (9790), Mr A. Davey (9648), Mr P. Gent (192), Mr J.E. Knight (94), Mr S. Martin (4753), Dr J. Nattinger (6648) and Mr L. Whicher (1345).

Wayne Jarvis, Secretary

#### Report of the Treasurer 1998

In my report last year I outlined the measures which Council had been forced to make to avoid repeating the very substantial deficit to the General Fund in 1997. I am pleased to be able to report that the measures taken together with a number of favourable factors have resulted in a reduction in the loss from over £12,000 to £851 – with expenditure decreasing by £1799 and income increasing by £9721. However, it is of some concern that a substantial part of the increase in income resulted from sources which are unlikely to yield such good returns in the current year (particularly investment income).

The AES still has one of the lowest subscription rates when compared with other Societies and your Council does not want to increase them substantially in the near future as this is often counterproductive in the short term. However you will see from the Income and Expenditure account that despite increasing subscriptions last year, the cost of producing the *Bulletins* and *Bug Club Magazines* exceeded membership subscriptions and donations by almost £7000. We need to reduce this gap, and since the cost of increasing the print run of our publications is relatively small, the key to the long term future lies with an increase in membership. I therefore reiterate my plea to all members to give some of their time to help the Society recruit more members and hence enable us to maintain and possibly enhance the *Bulletins* and *Bug Club Magazines* without increasing subscriptions.



On the publications front (*i.e.* AES Handbooks, Leaflets and Pamphlets) it was a fairly uneventful year. Sales of existing publications were down by about 10% on the previous year and although no new publications were completed a superb new handbook on Stick and Leaf-insects was at the printers. However, the Publications Fund made a higher surplus than in the previous year due to an increase in investment income to the funds reserved for producing new publications. Several new and revised handbooks are in course of preparation and we welcome ideas from members for new publications. In my additional role as Hon. General Editor as well as Treasurer I would be pleased to hear from anyone who has ideas or can help with writing or illustrating future handbooks.

R.A. Fry, Hon. Treasurer

The accounts of the Society for 1998 can be found on the Wants & Exchange List, No. 223, June 1999.

#### **Conservation Report 1998**

National and International representation

The Society was represented at all meetings of the Join Committee for the Conservation of British Invertebrates (JCCBI). Mr Don McNamara joined Dr David Lonsdale as a representative following the resignation of Mr Darren Mann, who continued as a member of the AES Conservation Committee. In its JCCBI work, the AES took the lead in corresponding with the Environment Minister, Mr Michael Meacher, following his public offer to consider suggestions for a governmental role in ending the "Cinderella" status of invertebrate conservation. However, no new initiative has so far resulted from this correspondence.

During the year, the JCCBI reached a crisis point due to the resignation of its very able co-ordinator, Mr Steve Brooks of the Natural History Museum. The AES has to take urgent action to ensure that the JCCBI autumn 1998 meeting could take place, and we are glad to report that the meeting resulted in the appointment of Mr Nigel Bourn of Butterfly Conservation as JCCBI co-ordinator. The autumn meeting also included a progress report on negotiations for possible funding by other national conservation bodies. At the time of writing, these talks are still in progress, but there is some cause for encouragement.

One of the issues discussed at recent JCCBI meetings has been the conservation of invertebrates which depend on fungi and which could



be at risk from excessive collecting of mushrooms. Although the risk is potentially considerable, the consensus was that collectors of fungi should be asked to adhere to a voluntary code rather than be subjected to an arguably draconian law. This approach has now been implemented with the publication of a code by English Nature in conjunction with other UK organisations.

Whereas fungal collecting is under increasing pressure, the value of scheduling of invertebrates for legal protection is being carefully questioned in a study commissioned by the Joint Nature Conservation Committee. The AES accepted an invitation to submit written evidence and to attend a meeting in London in November 1998. The meeting, which involved several interest-groups, seemed to show a consensus that scheduling against collection should be confined to a very small range of species which might genuinely require such protection.

#### Local activities and representation

The AES area representation scheme has expanded to include 17 Reps who cover various counties of Great Britain, and also the Irish Republic. This has been achieved thanks to the efforts of the AES Habitat Conservation Officer, Mr Martin Harvey, who will be standing down from this role at the 1999 Annual General Meeting. The scheme seems to work best in the several British counties where local invertebrate groups have been formed. Recent additions to these are the Worcestershire Invertebrate Group, found by Mr Geoff Trevis and the Berkshire Network for Invertebrate Conservation, founded by Martin Harvey.

#### Publications and displays

As usual, we published three editions of *Invertebrate Conservation News. ICN* may have helped to pioneer the current debate about the development of greenfield versus brownfield sites. The value of the latter for wildlife is now being discussed widely and there is a growing awareness that a rigid argument always in favour of brownfield development is simplistic and potentially damaging.

We also mounted, as usual, a display for the Society's Annual Exhibition and have continued to work towards other educational projects. The slide pack published jointly with English Nature sold out during the year, but Council has authorised the production for further copies. It is also hoped that a new slide pack could be produced, so as to cover habitats such as mountains and coastal areas.



#### Conclusions

Invertebrate conservation remains very difficult to fund in its own right, but it is being pursued by an increasing number of individual organisations which, although not specialising in invertebrates, have come to know something of their value and their ecological importance.

David Lonsdale and Martin Harvey

#### **AES Bug Club Annual Report 1998-1999**

1998 was another successful year for the AES Bug Club, although we did suffer a slight drop in membership. The AES Bug Club Newsletter was renamed as the AES Bug Club Magazine at the start of 1998 to reflect its increasingly professional appearance. The Magazine remains the mainstay of the club and we feel that it represents an attractive and informative publication. We have received excellent feedback on the magazine during the past year and this is due in no small part to the effort of the printers and all the people who have submitted articles over the year. I'd like to take this opportunity to thank all at the Cravitz Printing Company and the following people (in alphabetical order) who have written articles: Dave Clarke, Reg Fry, Nick Holford, Zoe Masters, Gordon Ramel and Rachel Welton in addition to all the Bug Clubbers who sent in their pictures and articles.

The Club organised a number of "bug" events during the year and attended a number of shows and exhibitions. Many of the Committee members have also given talks at schools, libraries and other organisations over the year. In comparison to previous years we ran fewer events during 1998 and this is largely a reflection of increasing work commitments acting on Bug Club committee members. However we did appoint a London Events Co-ordinator and he has organised a number of events and gone some considerable way to increasing the profile of the Club. I would like to thank Nick Baker, Marianne Battersby, Simon Bell, Lee Gibbs (London Events Co-ordinator), Nick Holford, Zoe Masters, Gordon Ramel and Paul Taylor for running events.

The Club's website has continued to go from strength to strength, the site is visited by some 90 people every day! Over the course of 1998 it won a number of internet awards and was featured in *BBC Wildlife Magazine*. The numbers of new members enrolling as a direct result of visiting the website has increased dramatically and should continue to rise during 1999.



AES Bug Club T-shirts were added to the merchandise range during the past year and have sold well, although we expect a marked increase in sales during 1999.

Considerable progress was made on the "School's Pack" towards the end of the year and this excellent educational resource should be available for sale during 1999. I would like to thank Nick Holford in particular for the huge amount of work he has put in developing this resource pack.

I would also like to thank the members of the AES Council for their continued hard work. In particular I would like to thank: Reg Fry, Nick Holford and Wayne Jarvis.

In closing I'm sure you'll agree that the Club fills a unique educational niche for children; however it cannot realise its full potential without YOUR help! In order to reverse the decline in membership and produce a truly national Club we need to have "area representatives" who are willing to act on a local level and in particular organise "bug events". Organising these events doesn't require much effort, the Committee can help with advice, but it would make all the difference to the Club and more importantly the children who are members. If you think you can act as an area representative please write to me at the usual Society address.

Kieren Pitts AES Bug Club Committee Chairman





# Mature Convolvulus hawk-moth (*Agrius convolvuli*) larvae at Ford village, near Aylesbury, Bucks

by Roger Kemp (3152)

Kemp's Farm, Chapel Road, Ford, Aylesbury, Buckinghamshire SL6 6BB.

On Friday, 2nd October 1998 I was tidying up waste ground on the farm when I noticed a nearly full-grown Convolvulus hawk-moth (*Agrius convolvuli*) larva resting on its foodplant Hedge bindweed (*Calystegia sepium*) growing up a telegraph pole support (Fig. 1). The colour of the larva (Plate 99I) was similar to that illustrated in Porter's book.



Further search revealed a second one only a few feet away from the first but smaller and much darker in colour (Plate 99J). Wild larvae of this species are rarely found in the wild in Britain, especially so far inland, and it is said they seldom reach maturity. These two could be the rare exceptions!

#### References

Porter, J. (1996). The Colour Identification Guide to Caterpillars of the British Isles. p.72.Carter, D.J. and Hargreaves, B. (1986). A Field Guide to Caterpillars and Butterflies and Moths in Britain and Europe, p.117.



#### A letter from Walter Rothschild to T.B. Blow

by Bernard Verdcourt

Royal Botanic Gardens, Kew, Richmond, Surrey TQ9 3AB.

The following transcription is of a letter (on black-edged paper) which accompanied a recently purchased copy of Miriam Rothschild's *Dear Lord Rothschild*, *Birds, Butterflies and History* 1983. No Blow appears in Miriam's index but he is undoubtedly Thomas Bates Blow (1854-1941) who was born and died in Welwyn, Hertfordshire and certainly visited Madagascar in 1924. He was a well-known amateur botanist, an exporter of bee-keeping equipment and altogether rather a strange person.

#### 148 Piccadilly, W.1

June 6th 1924

Dear Mr Blow,

Many thanks for your letter. If you will ask at the desk in the Hall at the Natural History Museum for me, I shall be called at once. I have always been much interested in the fauna of Madagascar and have always been unlucky. The latest experience was that a collector undertook to send me a more or less complete collection of the lepidoptera, and indeed sent in two years 120 thousand moths and butterflies but these consisted of about 30 or 40 of the commonest in some cases world wide small species in series of several thousand each and then sued me because I would not pay for more than I wanted.

Yours sincerely

Rothschild

Although letters of Walter Rothschild are numerous I am persuaded this one is worth publishing since Miriam Rothschild (to whom I sent a copy) informs me that Blow is not included in the extensive list she has maintained of Walter's collectors.

The black-edged notepaper could have been in connection with his brother Nathaniel Charles (1877-1923). The letter has been donated to the Natural History Museum.



#### Crete: 1998

by M.J. Dawson (9130) and J.S. Hemmings (10628)

66 Tivoli Crescent, Brighton BN1 5ND.

The main reason for this excursion was to find the Ascalaphid which inhabits this island exclusively, *Ascalaphus rhomboideus cretensis* (Plate 99K). Many Ascalaphids are found in open country but *cretensis* is always, as far as we were able to ascertain, among scrubland, with bushes and trees (Plate 99L). Its near relative *A. rh. rhomboideus*, on the Greek mainland, also requires similar terrain.

The flight is typical of all Ascalaphids, direct with sudden turns. Speed is about twelve miles per hour, with extremely fast dashes to capture small insects, which are taken in flight. A pair mating flies more slowly and settles on bushes.

These insects are not abundant and the largest number seen in the air at one time was six. They fly from 09.00 hours to about midday, after which the temperature is too high and they, and most other insects, retire into the shade. 98°F was the average temperature during the last two weeks of June, rising to 104°F in July.

Butterflies were not abundant, as they are in Spain, Italy or mainland Greece. The following were captured for certain identification, except the Two-tailed pasha *Charaxes jasius*. Those marked \* were examined but are not included in *Collins Field Guide* by Tolman.

| Swallowtail              | Papilio machaon       | Brown argus           | Aricia agestis        |
|--------------------------|-----------------------|-----------------------|-----------------------|
| Scarce swallowtail       | Iphiclides podalirius | Cretan argus          | Polyommatus psylorita |
| Large white              | Pieris brassicae      | Two-tailed pasha      | Charaxes jasius       |
| Small white              | Pieris rapae          | Red admiral           | Vanessa atalanta      |
| Green-striped white*     | Euchloe belemia       | Peacock*              | Inachis io            |
| Mountain small white     | Pieris ergane         | Painted lady          | Vanessa cardui        |
| Eastern bath white       | Pontia edusa          | Cretan grayling       | Hipparchia cretica    |
| Clouded yellow           | Colias crocea         | Meadow brown          | Maniola jurtina       |
| Cleopatra                | Gonepteryx cleopatra  | Dusky meadow brown*   | Hyponephele lycaon    |
| Wood white               | Leptidea sinapis      | Oriental meadow brown | H. lupina             |
| Small copper             | Lycaena phlaeas       | Cretan small heath    | Coenonympha thyrsis   |
| Lang's short-tailed blue | Leptotes pirithous    | Speckled wood         | Pararge aegeria       |
| Holly blue               | Celastrina argiolus   | Wall brown            | Lasiommata megera     |
| Zephyr blue*             | Plebejus pylaon       | Mediterranean skipper | Gegenes nostrodamus   |



#### Comma aberrations

by Stephen Meredith (7341)

5 Rutlish Road, Merton Park, London SW19 3AL.

I first encountered the Comma (*Polygonia c-album*) in the 1940s, when aged seven or eight. I used to visit two aunts who had a large house and garden on the outskirts of Worcester, which was a stronghold of the species, along with the counties of Herefordshire and Monmouthshire. The Comma fed almost entirely on the then common agricultural plant, hop. There were many fruit trees in my aunts garden, and it was not unusual to see Commas, Peacocks and Red admirals inebriated on rotting and fermenting fruit.

Since that time, I have probably seen an average of about five Commas each year, which means that in a lifetime of butterfly watching, I have probably seen only 300-400 specimens. Hardly surprisingly, apart from the odd variation (var. *hutchinsoni*), I have never seen an unusual example, so it was a remarkable co-incidence that on 19th July 1998 I saw an individual with unusual upper hindwing markings, and on 21st July, in a nearby wood, an even more extraordinary one.

Though I have referred to *Varieties of British Butterflies* by F.W. Frohawk (1938) and *Aberrations of British Butterflies* by A.D.A. Russwurm (1978), the nearest aberration to which I can find to the examples that I witnessed is given in *South's British Butterflies* by T.G. Howarth (1973). The aberration was extremely close to that of ab. *suffusa*, which was found in the Forest of Dean, Gloucestershire, in 1934. Its behaviour of the two individuals was not exactly Comma-like, as they fluttered weakly – I thought at first that the specimens were Oak eggar moths until they settled. It is known that inbreeding can produce the extreme markings, but those of the specimens that I witnessed, looked more like the result of extreme temperature, maybe pupation occurred in a particularly cold part of the wood.

When I saw the first specimen, I had run out of film in my telefoto camera. After one distant shot, it flew off and was not seen again. Fortunately, I had far better luck with the second, and more extreme Comma (Plate 99M). I took a few pictures of the butterfly before it too disappeared into the wood.

The *suffusa* wing pattern is not entirely symmetrical, which means that it is either a bilateral gynandromorph, which would seem to stretch the bounds of possibility too far, or more likely, it is due to environmental factors.



# The truth about cats and dogs... a flea's perspective

by Wayne Jarvis (9899)

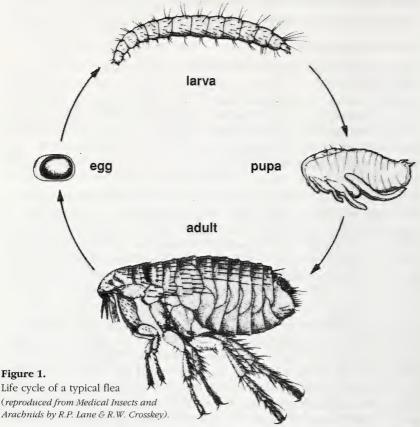
87 Uplands, Welwyn Garden City, Hertfordshire AL8 7EH. e-mail wayj@nhm.ac.uk

Whether we are aware of the fact or not, one of the summer's most abundant insects are the Fleas or Siphonaptera. The most common contact between humans with these insects is on our domesticated pet mammals and birds, (in particular, our cats and dogs). However, it is only the adult stage which is parasitic, the larvae live on organic matter which is found in the nest or favourite sleeping place of the host.

Fleas are small, wing-less insects, measuring no more than around 8mm and as little as 1mm. They are holometabolous (*i.e.* undergo an egg-larva-pupa-adult life cycle, figure 1). The adults are flattened laterally and usually heavily sclerotised and hairy, ranging from light brown to almost black in colouration. The larvae on the other hand are leg-less, eye-less and elongate with strong bristles and biting mouthparts. The pupae, which are free-living are contained within a cocoon.

Life for the flea starts in an egg, measuring around half a millimetre in length. They are generally white and difficult to see with the naked eve, unless they are laid on a contrasting surface. The female flea lays the eggs on the floor of the nest, room or bed of the host on which she is living. The eggs hatch after a few days, depending upon the conditions (temperature, humidity etc.). The larva emerges from the egg using a hard butt on its head to emerge from the egg capsule, and then begins feeding on dried skin and any other organic matter which its host has inadvertently left behind. The larva grows up to 5mm in length and requires a degree of dampness if it is to continue to develop. Also essential to the larva's development is dried and undigested blood which is excreted, undigested, by adults during and after their blood meals. It is the iron within this blood that the larva uses to develop its hard cuticle. After two or three weeks of development, the larva will double itself up into the shape of a U and spin a silk cocoon around itself where it enters the pupal phase. The white pupa darkens steadily and is remarkably camouflaged by dust and debris which sticks to the pupal silk by a sticky glue which is secreted during the spinning of the cocoon. After a week to fourteen days, the adult will be ready to emerge. However, the flea has evolved a spectacular mechanism to





ensure that its emergence will be as successful as possible. The flea lies dormant until it senses vibrations, carbon dioxide and warmth, which it hopes are the movements of host returning home. Fleas are extremely patient creatures, they can stay in this dormant phase for up to a year. As soon as the flea is awoken, it emerges from its cocoon and rapidly makes its way to its host, where it takes its first blood meal.

The life-span of a flea is not rigidly set. Depending upon the combination of correct temperature, food-supply, humidity along with numerous other factors, the insect may live up to a year and a half. However, the average life expectancy is two or three months. As with all animals, eating and breeding are the two most important aspects of life, and the few months of the life of the flea is no exception. For these two processes a host is essential.



Evolution has provided the flea with a range of adaptations to both sense and then reach a host. The eyes of fleas are poor where they exist at all, and at best are only able to discern vague shadows and shapes. The flea does however have some senses which are extremely well developed. The flea uses its sense of vibration after it has emerged from its pupal case. The vibrations of an arriving host alert the flea that a blood meal may be on the way. Its second adaptation, its powerful sense of smell then comes to the fore. The flea is able to distinguish different species of host by their smell, and it is this which determines whether the flea continues on its quest for food. The smell is detected by the flea's antennae, and possibly by an area towards the rear of the flea which is sensitive to vibrations, warmth etc. called the sensilium. Most fleas are specific to a group of host species, or even a single species and the flea may rather perish than take a meal from the wrong host. Others will take blood from a non-host species, but this blood will not allow it to breed successfully, as the chemical composition of the blood is not correct.

Having decided that there is a host present, the next problem that the flea faces is how to get to it. A small room containing a host two or three metres away may sound an easy journey to take, but when you are only a few millimetres long, the journey seems a long and arduous one, and one which by the time you arrived at your destination would almost certainly have seen your host long since disappear. Evolution has therefore given the flea the power to jump. A human flea (Pulex irritans), figure 2, is known to be able to jump about 150 times its own length (approx. 7.5cm or 3 inches) and 80 times its length up (approx 4cm or 1.6 inches). The record jump up for a human flea is 31.5cm or 12.5 inches along and 20.5 cm or 8 inches high. In human terms, a man, 1.75m in height would be able to jump 1102m along and 625m high, weight and air resistance permitting of course! The jump of the flea is incredible. The leap of the flea is powered by the elasticity of the middle segments of the hind legs. It is as if the legs contain stretched rubber bands which are fired simultaneously pushing the flea into the air, often somersaulting as it goes. The middle legs of the flea during the flight splay upwards, whilst its rear legs point backwards, so that however the flea lands, it does so on its feet (but not necessarily the right way up!). The impact of the flea hitting the ground is taken by the supple joints and the long flea claws help the insect stabilise itself immediately.

Having reached its host, the next task ahead of the flea is to feed. Fleas tend to feed where the skin is thin and there is a numerous supply of blood vessels to tap into. Commonly, bites occur around the ankle or in the groin. The flea, when it has chosen its spot, then lifts its



abdomen upwards and plunges its piercing proboscis deep into the host. The flea injects some of its own saliva into the host which comprises anticoagulant chemicals and an anaesthetic to stop the blood from clotting and from being felt until after the flea has fed. It is this saliva which causes the reddening and itchiness of the "bite" over the next few days. Blood is sucked up by the flea, not in large quantities (only around 0.0004 cubic millimetres), over a long period of time. Often during feeding a small drop of blood is squirted from the rectum of the flea, (this appears to be the practice with numerous bloodsucking insects). It is this "waste-blood" which is important in the development of the flea larvae as described earlier. Once fully gorged, the flea stops the intake of blood, raises its abdomen and pulls the proboscis free from the host before returning to the free-living nature it had previously been accustomed to. A flea will aim to feed daily in optimum conditions, however, this is rarely the case. In winter, when the temperature drops, the flea can go weeks without feeding. It seems that when food is not available, the flea goes into a "hibernation" to be awoken again only by the vibrations of a passing host. It has been recorded that a flea can go for six months without feeding, and be none the worse for the experience.

For the flea, feeding is usually undertaken before reproduction is even thought of. Some bird fleas are an exception to this rule, but for those fleas which are directly involved in human lives, the former is the case. The male of *Pulex irritans* (Figure 2) needs a blood meal before it mates. Finding a mate is the next hurdle for the flea after it has fed. This may not be as easy as it seems. It is thought that only a small percentage of adult fleas experience the rigours of reproduction. The male fleas attempt to track down hosts through smell and by sensing minute currents of air. A theory is suggested that the male serenades females with piercing flea music far above the register of hearing known to man. However, this is a theory and is widely disbelieved. In whatever manner the male tracks down his mate, if he indeed manages to do so, the reproduction process is no less of a marvel than the rest of the flea's life.

The mating of fleas was discussed widely prior to the invention of the microscope and many misconceptions were believed. This short poem, written by Horace Jakes in the mid-1950s emphasises this.

The male and female flea to you

Do not appear distinct;

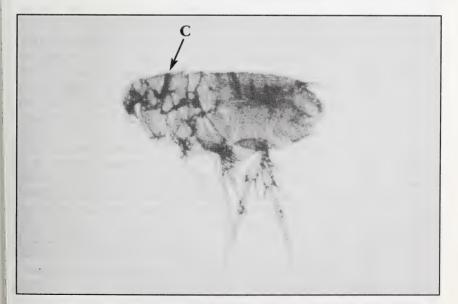
But fleas can tell which one is who

When maritally linked.





Figure 2. A female Human flea, Pulex irritans.



**Figure 3.** A female Mole flea, *Hystrichopsylla talpae*, showing the pronotal combs (ctenidium) = **C**. These are important in taxonomy because of their presence or absence. Figure 2 shows the Human flea in which these combs are absent.



Males and females are in fact markedly different, but it is only recently that these differences have been discovered. The male is usually somewhat smaller than the female and the last segments of the abdomen of the male are shaped so as to give the look of a tail tilted into the air. However, the marvel of the male flea is that he possesses the most elaborate genital equipment known throughout the animal kingdom. In one group of fleas, the jigger fleas (Tunga sp.), comprise very little other than genitalia. Once the male has found his mate, he approaches her and pushes his head against hers. He then runs beneath her from behind, and stands back to underside, tail to tail. The male then grasps the female's abdomen with his antennae and curls his tail upwards holding the female into place with spiny clasps. The males elaborate genital organs then engage into copulation, which usually lasts around three hours. The brutality of the male's hold on the female may cause her some degree of injury during mating, but rarely are these injuries life-threatening. The parents will then eat voraciously before the clutch of eggs are laid, and droppings of blood are excreted every few minutes rather than every twenty minutes or so as is usual. This ensures that there is a good scattering of food for the larvae to feed upon. It is only then that the female will lay her eggs around the area. A female can lay several hundred eggs in her life time, Cat fleas laying around 25 eggs per day for up to three or four weeks or more under optimum conditions.

It is at this point that the cycle of life for the flea has reached full turn. Mating occurs on many occasions during a female's life if there are enough male fleas to find her. However, in recent times, those species which are commonly found as being commensal with man have declined in numbers. This is undoubtedly due to the methods which are used in our everyday lives. The advent of the vacuum cleaner has made the homes of the human flea (P. irritans) the cat flea (Ctenocephalides felis felis) and the dog flea (C. canis) much cleaner and as a result the amount of organic matter in the piles of carpets is much smaller. It is therefore, much more difficult but by no means impossible, for a home with an flea infested cat or dog to host the development of the larval stage of the flea. Another problem for the flea is the installation of central heating systems in houses. These have taken the dampness out of most homes, a requirement which is essential to the development of the flea. Having said this, there is some evidence that fleas are adapting to this environmental change, and indeed cat fleas are now the most common species of flea found in the United Kingdom.

These two changes in the environment of the flea have caused a decreased awareness of the creature in everyday life. Only a hundred years or so ago, fleas were looked upon as the evil of all evils. Man has



attempted to unsuccessfully rid himself of these pests for hundreds of years without much success until recent times. It is strange therefore that man should also therefore harbour a soft spot for the creatures. This was highlighted in the flea circus, which seems to have originated during the sixteenth century in England and the Central American fascination of dressing fleas. Both of these "past-times" have now all but disappeared as the flea community has been decimated.

One of the main reasons for "dislike" of the flea is its ability to act as a disease vector. This is a common occurrence with insects which are blood feeders, and the flea is no exception. The most famous example is the transmission of plague. Bubonic plague is a bacterial disease (Yersinia pestis) which is a primary infection of rodents. The disease occurs in two forms. The urban form develops extremely rapidly into fatal septacaemia and the rodent dies quickly. The flea (usually Xenopsylla sp.) is sensitive to the change of the rat's cooling body temperature and stops feeding very soon after the hosts death. It is then, that an unsuspecting animal passing by is seen as an ideal host for a blood meal and the bacteria are transmitted. This causes exactly the same symptoms in the animal as seen in the rat and death occurs very quickly. As rats are generally found in close quarters to man, often, the animal which was passing by the rat corpse was a man and hence the disease was passed to populations very rapidly. It is this type of bubonic plague which hit London in the well-documented "Black Death". The second form of the disease, sylvatic form, still has a large reservoir in the ecosystem, but is not fatal today if it is treated early enough. The last major outbreak of this form of plague occurred in India between 1898 and 1918 when over 10 million people died. Since then the number of human plague reports have decreased markedly, but with such a large reservoir of the bacillus in the ecosystem and resistance to pesticides by both fleas and rodents, the potential is there for an outbreak to occur.

A common problem caused by fleas in everyday life, affects our pets. Fleas are also capable of transmitting the double-pored tapeworm (*Dipylidium caninum*) which is found in cats and dogs. The eggs of the tapeworm are discharged in the pet faeces and are ingested by third instar flea larvae. The tapeworm eggs hatch in the flea larva's mid-gut where they develop. By the time the flea reaches the adult stage, the tapeworms have penetrated the flea's gut wall into the haemocoel where they grow eventually causing the flea to die. When the pet grooms its self by licking its fur the fleas (and consequently worms) are ingested and the worm completes its life-cycle.

Of course man is not the only species to be affected by the flea. In the British Isles alone there are some 57 known species of flea that live



on a huge range of birds and mammals (only seven of which come into contact with man). Some species of flea are not very host specific, and are happy to feed on a range of hosts, including the cat flea (*C. felis felis*) which will quite happily take a blood meal from the pet owner and his dog. Others, such as the rabbit flea, (*Spilopsyllus cuniculi*) are extremely host specific to their rabbit hosts.

The rabbit flea (Spilopsyllus cuniculi) is the most documented example of a flea that is so closely bound to its host that it is unable to survive for long without it. The female rabbit flea can not breed until she has settled on a female rabbit that has herself become pregnant. When the female rabbit has become pregnant, the composition of the rabbit's blood changes. Approximately ten days before the female rabbit gives birth, her hormones in the blood change, which triggers the female flea to commence ovulation. When the rabbit bears her young, the female fleas detach themselves from the mother rabbit and jump onto the young where they start feeding again. It is this cue (another change in the chemical composition of the blood) that causes the female fleas to become sexually attractive once again and males, who have spent weeks alongside the females without any indication that they were aware of the females, begin to seek a mate. Egg-laying follows and the larvae, as soon as they emerge, have the benefits of a warren with much rabbit blood on the warren floor and a litter of young rabbits which will in turn become the new generation's hosts. This life style does however, have its drawbacks, as seen with the outbreak of myxomatosis. For every rabbit that perishes during an epidemic, thousands of rabbit fleas also die. Where many species of flea are able to switch hosts, the rabbit flea is so specialised that this is not an option, and hence the rabbit flea depends in turn on the success of the rabbit for its survival.

Finally, just in case you were thinking that fleas have it all their own way, think again. With the advent of the microscope, discoveries were made that were previously impossible to see. One such discovery was that fleas themselves suffer from parasites, and get as good as they give. The parasites of fleas include nematode worms, which eat away at the reproductive organs, protozoa, which feed on other internal parts of the flea, tape worms, causing death in all cases, mites, and bacteria (including the plague bacteria which in high enough numbers, block the flea's gut, killing it).

I end the article with a poem written by the Victorian mathematician, Augustus de Morgan, which was written soon after the discovery that fleas themselves are parasitised:



Great fleas have little fleas upon their backs to bite 'em,
And little fleas have lesser fleas, and so ad infinitum.
And the great fleas themselves, in turn, have greater fleas to go on;
While these in turn have greater still, and greater still, and so on.

#### Acknowledgement

I would like to thank Theresa Howard, Natural History Museum, for her help in checking and compiling this article.

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## A locally common occurrence of the Lime hawk-moth in Staffordshire

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire ST3 7AY.

During late May 1998 Mr Alan Flannagan reported to me that he had found dozens of Lime hawk-moths (*Mimas tiliae* L.) freshly emerged on fences, walls and tree trunks of lime trees (*Tilia* spp.) in the Normacot area of Staffordshire. Alan lives in this area and later in the summer he found large numbers of larvae and then during the autumn his grandson, Steve, dug up dozens of pupae. This species has been reported here before, but not in so many numbers. The Lime hawk-moth is a rare species in Staffordshire with only a few recordings.

I have recently received the sad news that Alan Flannagan died in hospital on 25th January 1999, age 55, after a short illness. I would like to dedicate this article to the memory of Alan, a good friend and colleague, who will be sadly missed. I send my deepest sympathy to his family.



#### Geranium bronze butterfly (Cacyreus marshalli)

by Andrew Halstead (6346)

The Royal Horticultural Society's Garden, Wisley, Woking, Surrey GU23 6QB.

In response to Peter May's letter (African butterfly in Sussex, October 1998, 57: 184). Over the years many exotic insects have been accidently introduced into Britain. Most are of no economic importance and have quietly become part of British fauna. This will not be the case with the Geranium bronze butterfly (*Cacyreus marshalli*). This originates from southern Africa and first became established in Mallorca in 1988. It has since spread throughout Spain and into other parts of the European mainland. Apart from its own efforts, it is likely that it is being spread by the horticultural trade and by holiday makers taking home souvenir cuttings of pelargoniums that are infested with eggs or young larvae.

This pest is extremely destructive to pelargoniums and also some hardy *Geranium* species. The young larvae damage the flower buds and later bore into the stems which often collapse through infection with secondary rots. In Spain the butterfly has many generations a year and it has become virtually impossible to grow pelargoniums without frequent use of insecticide sprays. Britain's cooler climate is likely to slow down the butterfly's life cycle but it would still be a damaging pest. People who think this alien butterfly will be a harmless addition to Britain's rather meagre list of native species have a naïve point of view. If the geranium bronze does become established in Britain there will be an increased use of pesticides in gardens and public parks throughout the land. The pesticide companies may benefit but insects will not!

#### Crane-flies at sugar

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire ST3 7AY.

On the evening of 30th August 1998, while sugaring with my friend Derek Heath we noticed two crane-flies lapping up sugar alongside Buff arches (*Habrosyne pyritoides* Hufn.) and Large yellow underwings (*Noctua pronuba* Linn.). I know some adult crane-flies do take up a small amount of nectar from time to time, depending upon species, while some do not feed at all, but this is the first time we have encountered them at sugar.





PLATE 99I. Agrius convolvuli larva, normal light form. (Kemp, Mature Convolvulus hawk moth...)



PLATE 99J. Agrius convolvuli larva, unusual dark form. (Kemp, Mature Convolvulus hawk moth...)



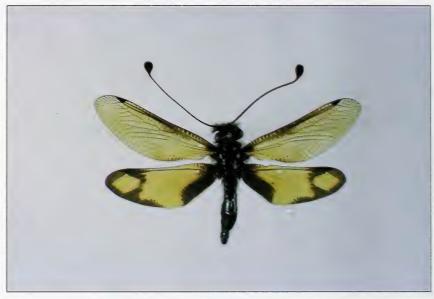


PLATE 99K. The female Ascalaphid. Ascalaphus rhomboideus cretensis. (Dawson & Hemmings – Crete, 1998)



PLATE 99L. A typical site where Ascalaphus rhomboideus cretensis was found (Dawson & Hemmings – Crete, 1998)





PLATE 99M. The Comma, *Polygonia c-album* ab. *suffusa*. (Meredith – Comma aberrations)



PLATE 99N.
The Waring Tropical.
(Waring – A light-trap for the brief-case.)





PLATE 99O. Village green flamboyant (*Delonix regia*) at Tamarin. (Plester – Flogging a dead dodo)

Migrants, Grass yellows, the Citrus swallowtail, African monarchs and several species of blues are often spotted flying erratically over a village green of this kind.



PLATE 99P. Part of the Black River Gorges National Park. (Plester – Flogging a dead dodo)

The small satyrid Henotesia narcissus flies in shady situations in habitats like this. There are also many dragonflies



## Book Review

#### The Dragonflies of Staffordshire

by Neil Collingwood. 80 pages, 13 figs, 3 black and white and 10 in colour, 19 distribution maps. 210x148mm. Paperback. ISBN 1 8744 14 22X, ISSN 0309-2100. Publication No. 18, 1997. Potteries Museum Publications. Available from the Sales Manager, Museum Shop, The Potteries Museum and Art Gallery, Bethesda Street, Hanley, Stoke-on-Trent ST1 3DE. Telephone: 01782 232323. Price £5.50.

The Dragonflies of Staffordshire is the latest in a series of atlases published by the Staffordshire local records centre, based at the Potteries Museum and Art Gallery, Hanley, Stoke-on-Trent. This series began with Richard Warren's atlas of the Lepidoptera of Staffordshire, Part 1, Butterflies in 1975, and has proceeded to cover many other orders since then. It is hoped that these publications will continue for many years to come, being able to serve studies that will assist the aims of nature conservation.

The distribution maps show an outline of the Watsonian vice-county of Staffordshire (VC39) – changes in political boundaries have occurred a number of times in the past century – so greater continuity in recording and easier comparison of maps from different periods is made possible by using these 200-year-old vice-county boundaries. Unlike the first Lepidoptera atlases, the maps here are overlaid with records on the basis of 1km squares, which allows for a much more accurate picture of distribution. Plotted on the 10km square basis as used in the earlier atlases, our rarest dragonfly, the White-faced darter (*Leucorrhinia dubia*), would appear to be present in an area roughly one twentieth of the total area of Staffordshire. In truth however, it occupies only one small site measuring less than one three-thousandth of the county's area.

The distribution of riverine species such as the Banded demoiselle is also much clearer when plotted on the basis of 1km squares. Plotted, records of this species clearly show the courses of certain of the county's rivers, whereas the use of 10km squares would obscure this pattern.

Other features in the book include some hints on dragonfly-watching, photographing dragonflies, description of species, flight period,



breeding-status, habitat, Staffordshire history and current status and British distribution. Neil Collingwood is a well known Staffordshire entomologist whose knowledge of the Staffordshire Odonata is second to none. Neil has spent most of his spare time compiling the book, which has taken some years to do, and many long hours in the field. I must congratulate him on a most useful and informative book on Staffordshire dragonflies which has been produced at such a low price.

## An encounter with a very rare Staffordshire butterfly

by Jan Koryszko (6089)

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On 18th August 1997, Charles Byatt, Derek Heath and myself visited Gnosall disused railway line, Staffordshire – an area of great interest to entomologists'. Recent discoveries there have been the Grizzled skipper (*Pyrgus malvae* L.), the Blackneck (*Lygephila pastinum* Treitschke) and the Micro (*Homoeosoma sinuella* Fabr.) to name but a few interesting species.

We arrived just after midday, the weather was very warm and sunny and there were a number of Peacocks (Inachis io L.) and a single example of Comma (Polygonia c-album L.) flying. I netted a high flying Vapourer moth (Orgyia antiqua L.) which seemed to be trying to evade a Brown hawker (Aeshna grandis L.) which was patrolling up and down the path. Then, to our surprise, a Small pearl-bordered fritillary (Boloria selene selene D.&S.) flew on to the path. I have not seen this species here before; the last time I saw it was at Burnt Wood, Staffordshire in the early 1990s where it has since become extinct. On informing the county Lepidoptera recorder Mr R.G. Warren of our find, he told me it was only the second specimen to be recorded at Gnosall, the first being in the early 1980s. He was most excited by the appearance of this butterfly again at Gnosall. He further said that there may be a colony close by at Aqualate - it is a likely spot to find this species - but further investigation is needed. It still occurs at Doley Common which we visited, but no butterflies were encountered. There is also a colony at the Coombes Valley, first recorded in 1897 by the brothers John and William Hill. It has been considered to be extinct several times, but still exists at low density. This butterfly has disappeared from its old haunts in Staffordshire, but it is pleasing that this rare butterfly can still be found.



#### A light-trap for the brief-case

by Paul Waring (4220)

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The end of the 20th century finds many of us travelling more personmiles than ever before, both for work and pleasure. Members keep telling me of trips they have made to other parts of Europe and, increasingly, to more exotic locations. So they often relate something of the butterflies seen, but then apologise that they were unable to take light-trapping gear, usually because they were flying, and therefore their moth recording was limited to a few chance encounters. I used to be in the same position. Of course, wine-ropes and other bait often can be obtained or made up on site, but there is then the risk of spillages and mess on the next move, and bait really needs to be manned for the first two hours after dusk, which is often just the time of the evening meal or of socialising in the bar. The lights of the hotel or other outdoor lights can be inspected for moths if there is time but having a portable light-trap which can be left to run all night and inspected at leisure, such as before breakfast in the morning, is a tremendous advantage. The accompanying illustration shows a super-light moth-trap which can be slipped into a suitcase, or even a large briefcase, which will not over-stretch your weight allowance on international flights, so you can do some moth-trapping even at the hotel window on a conference or other business trip.

The trap is composed largely of existing, commercially available parts and was developed for use on the recent expeditions of the British Entomological and Natural History Society (BENHS) to Belize. It has been jokingly referred to as the "Waring tropical" ever since but the basic idea has been in use by applied entomologists for years (Plate 99N).

The trap consists of the fluorescent actinic tube (6W), vane assembly and entrance cone of the Heath trap and an inverted 14-inch diameter netting rearing cage (all available from Marris House Nets, 54 Richmond Park Avenue, Queen's Park, Bournemouth BH8 9DR). The cage is nothing more than a cylindrical netting tube, closed at one end and containing a wire ring to keep its shape. The other end is open, with a draw-string, and is designed to fit over a plant pot. It becomes a holding compartment for the moth trap simply by inverting it and drawing it round a wooden or plastic ring which supports the entrance cone and vanes and from which the trap can be suspended. This ring is the only part of the trap that needs to be made specially and can be



tailored to the size of your case, within limits. The use of double strings to suspend the trap also enables the three vanes to be held in place between them. I find that the inside of the netting provides the moths with sufficient surfaces on which to perch and that egg-boxes or other materials are not needed to line the trap. In fact egg-boxes are a liability if rain is likely, because they fill with water into which the moths fall. Without egg-boxes the trap is totally immune to tropical down-pours, the light-tube being cold in use and the rain tending to run down the net, with the moths surviving in good shape and the net drying out quickly. I use black netting, which is standard for the rearing cages because it is easiest to see through. I suspect white netting would lead to many more moths sitting on the outside of the trap rather than entering, rather as they do when using a white sheet. In recent years strong white plastic vanes have been supplied for Heath traps but these were preceded by clear plastic vanes which I suspect may lead to more moths entering the trap, for the same reason.

Regarding power sources, the most obvious option is to make use of mains power if this is available where you are staying. However, this means taking a small mains unit suitable for the local voltage, or the standard UK Heath trap mains unit and a step-up transformer. This can be quite heavy. There are small rechargeable sealed unit gel-cell batteries, such as the Panasonic LCR12V6.5P, which are supplied with a plug-in charger and are no heavier an option (capacity 6.5 amp-hours). You need to trickle charge these for about ten hours after each night of use but this is easy if you have a hotel room in which to leave them all day. They should never be allowed to run completely flat or they will not recover and they should not be overcharged either. The power drain of the present actinic tube and circuitry from the Heath trap is just under 0.5 amp-hours per hour (Tom Hughes, pers. comm.) so a ten hour run uses something approaching five amp-hours. This gives little leeway using a 6.5 amp-hour in new condition, but the battery must be recharged before any further use and a photocell switch or timer is strongly recommended to ensure the equipment is not left running any longer. If you have difficulty obtaining these batteries, try your local model-making shop. Mine retails its own brand of 12V seven amp-hour gel-cell under the name Aeroteck at £17.50 plus £11.50 for a plug-in charger. The batteries are also used for some burglar alarms so you could try suppliers of these.

The most weight-saving option is to run from a 12V battery such as that of your own vehicle or hire car. This saves taking the mains unit



but you will need to keep a check on the battery charge level and may not be able to run the trap all night unless you are travelling fair distances every day or so to charge the battery. It is worth fitting your trap with sufficient cable and a pair of crocodile clips so you can suspend it from a good vantage point without needing to remove the battery from the car. Fortunately, if you need to, batteries and battery chargers for cars and motorcycles can normally be obtained in the large towns and cities of most countries in the world.

Concerning the performance of the trap, you will find that if it is suspended at about shoulder-height it will catch and hold slightly more moths than the conventional metal box or tub design of Heath trap using the same electrical components and standing on the ground. If you can find an early version of the Heath trap (pre-1985), when these were fitted with a Phillips genuine AC converter and use this as a basis for your new trap you will catch twice as many moths as using the newer pulsed DC units. Unfortunately, the Phillips units are no longer available. Note that traps with the Phillips units have two to three times the power output but also two to three times the power consumption. This means small batteries like the Panasonic above will only power them for about three hours. In theory you could run the new-style units for five or six ten-hour nights and still have 25% capacity before recharging, but your car probably won't start on such a low battery and avoiding draining the battery too much prolongs its life so charging after every three nights is recommended

This trap has all the advantages of the Heath trap, in terms of portability and operation in remote or exotic places, but it is lighter and less bulky, even if you wisely take a spare net and use a photocell switch for convenience and to save battery power and life. All the components pack flat, even the plastic cone with some persuasion. The glass tube and vane assembly can be protected by putting it in a jiffy bag or in bubble-wrap.

For more information on the designs of other types of light trap and their use, including the basic physics of light output, power consumption and battery capacity, see *Guide to moth traps and their use* by Reg Fry and Paul Waring (1996) published by the Amateur Entomologists Society, P.O. Box 8774, London SW7 5ZG (£5.00).

I would like to thank Tom Hughes, formerly of Entech Services and supplier of the Heath trap, and Bob George, of Marris House Nets, for their help in the design and production of this trap.



#### **Autumnal Glasgow observations**

by Frank McCann (6291)

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In September and early October 1998 I saw some Ruby tiger (*Phragmatobia fuliginosa*) caterpillars resting and feeding on two species of plant in the Queenslie area of Glasgow. Most were resting half way up the stems of ragwort and feeding on the leaves, others were feeding on the leaves of thistle. In all, during the period, I saw around thirty Ruby tiger larvae.

Recently I have found similar larvae resting on vetches and trefoils about three hundred yards further on from where the Ruby tigers were feeding. Their hairs were various shades of brown ranging from light to dark. The one I found on vetch was black and I suspect it is the same species. I also found some smaller caterpillars which were probably Clouded border brindle (two), and a single one of the wainscots (possibly Smoky wainscot) which I have found in the Queenslie area before.

On 7th October I caught a Silver Y (*Autographa gamma*) moth near Queenslie. If was flying over and feeding on red clover flowers on a roadside verge near Easter Queenslie Road. About three weeks prior to this, I also found (in the same area) in Auchinlea Park, a Grey dagger caterpillar feeding on small beech which had been planted along with other trees several years before. The Grey dagger larva has now pupated in a container at home – I fed it on beech and birch.

I also saw quite a lot of Red admiral (*Vanessa atalanta*) butterflies in Glasgow during July and August and in September I found an Elephant hawk-moth (*Deilephila elpenor*) caterpillar. I think it was fully grown but it had been injured. I found it on a pavement next to a road verge. It had probably crawled from some willow herb plants which grew quite a distance away along the grassy verge. This was in the Wellhouse area of Easterhouse where I live.

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#### The demise of the Tiger beetle

by Gordon Knight (10332)

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In August 1993 I remember visiting a somewhat bleak headland north of Pwllcrochan (SM 876373) on the north Pembrokeshire coast and being impressed by the hundreds of larval Tiger beetle burrows. Situated in bare ground with a southern aspect, it was what one might expect in a sun-loving beetle (*Cicindela campestris*), and until that summer Tiger beetles were a regular early summer feature of the coast path as I reported in the *Bulletin* (Vol. **56**: 64, April 1997). One expected them to take off in front of one's feet when walking the coastal path and to land a few metres further on *ad infinitum*. Little did I realise that 1993 was going to be the last time I saw evidence of their abundance.

Media-grabbing disasters like the breaking up of the oil tanker Sea Empress in 1996 make headlines, but other disasters occur every year for one animal or another and rarely reach the headlines. Nor are they abnormal: it's Natures way. They belong to her on-going programme of Survival Tests.

As a regular walker of the coastal path I have seen few or no Tiger beetles in the summers which followed 1993, few in 1994, only five in the superb "African" summer of 1995, none in 1996 (although two were reported from Ramsey), three in 1997 and one in 1998. So what happened to so drastically reduce their populations? I outline some of my thoughts:

- On 16th/17th May 1993, a vicious, wet, southerly gale struck Pembrokeshire at the height of the adult Tiger beetle's active season, causing other problems as well; for example all Oak flowers were destroyed. No acorns followed and Jays rampaged about the following winter countryside and gardens seeking other foods.
- The winter of 1993/94 which followed was extremely wet, there being standing water along hundreds of yards of the coastal path.
- The winter of 1994-1995 was even wetter a record-breaker in fact, with yet more standing water extending over the bare sites favoured by Tiger beetle larvae. So perhaps it should not be surprising that there were virtually no adult Tiger beetles (nor Mining bees) in the superb summer of 1995.



According to Shelford (1908) the larval stage of the closely related *C. purpurea* lasts for two whole summers, plus most of a third – not surprising in view of the unpredictability of meals, near the end of which the pupal and adult stages quickly follow, but the adult does not emerge until the following spring. Thus it is underground for three whole years. Apparently if flooded out, the larva can move a short distance to a more suitable site, but during the high water-table winters and springs of 1993/94 and 1994/95 there cannot have been many safe, *nearby* sites to move to. Moreover it has been recorded that eggs and pre-adult stages are prone to fungal attack. One can only speculate as to which of either drowning or fungus attack took precedence in this situation.

It is relevant to record that the other common beetles along the coastal path, the Bloody-nosed beetle (*Timarcha tenebricosa*), was not affected by these set-backs, for example 47 were counted in April 1994, but then the wintering adult does not "hibernate" in a burrow.

It now seems therefore that it will be many years before the Tiger beetle population recovers from this demise.

#### Reference

Shelford, V.E. (1908). Life history of the Tiger beetle (*Cicindela purpurea* L.) of Linnean Soc. XXX (1907-1910), 157-184.



The Amateur Entomologists' Society

# 1999 EXHIBITION AND TRADE FAIR

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Saturday 2nd October 1999

Doors open 11.00am



#### Flogging a dead dodo

by Leigh Plester (2968)

BioFilm Oy, Ylä-Muuratjärvi, FIN-41800 Korpilahti, Finland.

There's a great deal of speculation attached to staying on a volcanic island, mainly involving the thought that what nature did eight million years ago she is quite capable of doing again now. So for the first few days one tends to ponce around on tip-toe, fearful of feeling the thin volcanic crust give way and of embarking on a quick trip to one of the world's hot-spots, a fickle tourist resort known to geologists as "Magma", which is basically what gave Pompei a face-lift. Point number two, the breezy way Mauritians have of quoting the island's address, even in an official capacity, as "Mauritius, Indian Ocean" does little to ease the queasy feeling of squatting on a pimple surrounded by a tropical sea whose man-eating horrors are the things one confronts in nightmares during a bad dose of flu.

To take my mind off the realities of squatting on a volcanic island I slithered into a bookshop on 5 December 1997 in a town called Rose Hill. There are good, if overpriced, road maps of Mauritius available locally so there is no excuse for falling into the sea. They enable you to figure out where you are – an important point, as the paved main road down the centre of the island introduces you to every nondescript, congested, urbanised nook and cranny the Republic has to offer, while filling your lungs, not with the exhilarating oxygen expected of an island in mid-ocean, but with exhaust fumes from decrepit diesels and wheezing lorries.

But back to my "cover story" (Good grief, where does he dig them up from?) – off the shelf France Staub's *Fauna of Mauritius and Associated Flora* seemed a good buy at Rp 280, as did J.R. William's *Butterflies of Mauritius* at a measly 60 cents. Being a scholar, I was able to recollect that the title of the bird book I picked up, *Nozz Wozzos* as the French pronounce it, means *Our birds*, but when I opened this 80 cents worth of book, I was outraged to read on the first pages "Le souhait de ce livret". I have never, ever hated wildlife booklets and certainly not this one.

All 86 pages of France Staub's slightly larger tome are worth reading and I particularly like the cover picture, which is one of an Olive white eye (a bird – no self-respecting insect would be seen dead in a show case with a prissy name like that) about to attack Mauritius' national flower, a drooping red Christmas-decoration-of-a-blossom that has the



bird hanging upside down, displaying the white ring around its eye, for all the world like a trapeze artist simultaneously filling in for the clown. The caption on the book's inside cover reads "Cover: Zosterops chloronothos about to drink nectar from Trocheta blackburniata". It might interest you to know firstly, the Blackburn is in the UK and secondly, that Staub used to be a dental surgeon in Mauritius, devoting most of his free time and retirement to ornithology and botany. He is also an accomplished water colour painter. I raise my humble bush hat.

While visiting Britain recently (1998), I was flabbergasted to see on sale in shop after shop stacks of books on wild flowers, birds, butterflies, gardening and herbs, all very much of a muchness, albeit each published to high technical standards. It took me ages to find something on European mammals, while guides to such invertebrates such as slugs, snails and centipedes, or even "spids" were simply not available off the shelf. Staub's volume, produced in comparative poverty in Mauritius, covers everything that creeps, crawls, slithers. slavers, takes off, stings, falls into your booze, swims or (like the defunct dodo) gathers dust in a museum. Alright, so some of the illustrations look as though they have been in a shop window for vonks (ages) but for tropical zoologising, books like Staub's simply rivet the attention. How about this (from page 22): "Leguat described and drew the picture of a large bird he saw in the marshes in Mauritius, one of which his party had managed to capture in Rodrigues where it had been blown by strong winds. It stood six feet high, was fat and tasty." Reminds me of some beefy earwigs I once found lurking under a block of flats.

How did I find myself on the mysterious island of Mauritius, once, may I reiterate – for the locals do *ad finitum* – home of the defunct dodo, early in December 1997? Well, the usual bunch of nincompoops (my "stars") had contrived to have a lady in distress write to my company (which, my colleague Nick still insists, is called BioFilth) on 21st October 1996. Her name was Anetta Chellapermal, which is worth noting, as around half the island's 1.1 million folk appear to bear the same surname. Finnish-educated, but living in Basingstoke, Anetta was looking for a job in filming and although my minuscule company was unable to help, I did offer her some sound advice. The upshot was that her father (astonishingly a Mauritian and a retired doctor married to a Polish lady) contacted me from slightly further north in Finland and asked why I didn't consider making a film about Mauritius. So I did consider, and while my old friend Nick had to opt out of the Mauritius project in the early autumn of 1997 due to the sudden ill health, and



subsequent death of his father in the UK and my naturalist/artist friend Markku Asunta also had to cry off due to the Finnish Forest and Park Service making him an offer he couldn't refuse for illustrations just before our travel agents sent us the final bill, I myself, actually flew to "Dodo island" by Air France.

Simplicity is always just out of reach. Due to a quirk (those loony "stars" again), a young vivacious Finnish lady journalist had written an article about my tropical adventures for the local rag the previous summer (see, eventually, *Hazy Notions* or, if you are fed up with my Borneo exploits, don't). An actor from the local Korpilahti Summer Theatre, Petri Kolula (who had played Hitler in a weird version of *Mein Kampf*), read her article and had decided that where Leech Plester was going, he was going too. Finns are the most stubborn things after a rusty Land Rover bolt.

Petri, 26, knows as much about insects and wildlife conservation on Mauritius, the subject of the programme I eventually hoped to sell to Finnish TV, as a MEP does of Mother Hubbard's woes, but in the event he proved a first class companion. His weakness was weight-lifting, a hobby he obstinately indulged in throughout the thick and thin of our life in Mauritius. Petri had a Tarzanian physique but early on, due to his habit of wearing what appeared to be a pair of underpants on his head to ward off the heat of the sun, he earned himself the nickname of "Sheik Kalúla".

Joe instantly appreciated the title. Joe was a 67 year-old stocky, ponytail-toting, twinkling-eyed, dog-ownering, confirmed-bachelor Mauritian of French ancestry with 27 years as a mining engineer in Tanganyika (now Tanzania) under his belt and he was our general guide, chauffeur and factotum. He was certainly one of the most impressive, tough yet humane men I have ever met. Now, old son, or daughter, as the case may be, put down the phone; there is no need to cancel next year's subscription, for we finally enter the realm of the hexapod (that six-legged friend of ours – the nutter with the bulging eyes – our "love me, love my insect" counterpart).

J.R Williams published a booklet on the *Butterflies of Mauritius* in 1989 (previously reviewed in the *Bulletin*). Williams records the occurrence of 37 butterfly species on Mauritius. Ten of these are either (*sic*) "extinct, rare or non-existent and not likely to be found even by the assiduous collector", an oblique reference, if I may say so, to AES members. In practice, it means one can sit in the yard clutching a coke or beer, waving one's glass at any passing flutterby and telling one's



enraptured audience with just about one hundred percent certainty that it's a *Papilio demodocus* (big and flashy) or a *Eurema floricola* (wizened and custardy). Of course that diminutive blue flitting about that leguminous bush above those discarded plastic water bottles must be a *Zizula hylax*, doncher-know. *Zizula* looks like inferior "designer jeans" – common blues that have shrunk in the wash; definitely a money-back insect, if you've just forked out several hundred quid for a new tropical specimen cabinet. Unless you feel like inviting heat stroke by catching about forty million of the blighters.

Upon the arrival of just Sheik Kalúla and myself on the evening of 4 December it was very hot. We had rented a "bungalow", Mauritian dialect for a three-storey house. Possibly the accommodation (costing only about £25 a night for the entire caboodle) might not have appealed to everyone, but it had a shared illuminated swimming pool, a tarmac forecourt capable of frying eggs under the noonday sun, wall-sprawling Allamanda shrubs covered with huge yellow trumpet-like blooms that wilted but were magically reincarnated day after day, furtive night and day watchmen, a neighbouring wasteland plot populated by some of the forty million diminutive blue butterflies, and lovely flat, slipper-like, squelchy slugs in the back garden. Lying close to the shore of the Indian Ocean, the district was known as Flic en Flac. The French probably know it as "Police under bombardment" or something. The three-storey "bungalow" had obviously been closed for weeks. Sauna baths were invented by the Finns, so we nonchalantly stripped off and threw some water on the

A power cut reached us as we reached for our towels, and the lights delicately withdrew. Joe fetched some candles from the local restaurant, lit one, and muttered in Creole as the electricity watts ficklelly returned to full power. While Kalúla showered, I took an AES gawp into the back garden, illuminated by a phosphorescent glow from the swimming pool lights. Thin local traffic made a muted din from over the back garden wall, standing at the spot where the neatly trimmed Bermuda grass ended. Several of the 7cm-long lovely dark brown slugs, velvety and slipper-like crawled, in the nonchalant way slugs have, across the concrete under our veranda and up the plinth on which the tiled top of the swimming pool stood, leaving trails of slime. In subsequent days I was to capture six of them but as they never ate anything provided in the usual tropical makeshift vivarium of a empty clear plastic water container. I felt duty bound to free them.



Some slim froggies living in a tiddler-filled culvert croaked softly just down the road. Somebody in the residential area was playing pop music, muted by the periodic hum of a car or two on the road over our back wall and the strip of wasteland before the whispering tamarind groves and the ocean shore, against which a restless sea patted its hands. It was a typical tropical evening.

The house floor was speckled with flies that had given up the ghost, the pattern being relieved by the odd glossy brown cockroach lying on its back, hard as mahogany, its thread-like antennae never to twitch again. After a long, hard trip and the disbelief that one has finally arrived in the tropics, the restless spirit drives one again and again back outside. By now, under the typically dim wattage tropical back door lamp a couple of nut-brown Noctuids had gathered, looking as though they had flown in our wake. House geckoes (=House lizards in the vernacular), Hemidactylus mabouia to be accurate, had already started to optimistically crawl out of their holes under the back porch roof. They reminded me of our tax inspector. Later they were to be "written down in evidence" in my laptop PC diary, because Sheik Kalúla immediately started to commune with them, meaning that he clicked his tongue continually gecko-fashion while staring up the skirt of the porch. Possibly there's a pill available nowadays for such behaviour, but just in case, I'm keeping my notes for his Finnish shrink. The night in the second storey room we decided to share was hot and sweaty; I hope I snored. I rather think that Kalúla geckoclicked. While he does so, let us have a giggle at the caption to photo number 139 on plate 28 of France Staub's book which reads, "frightened Phelsuma guimbeaui (gecko) being tail-pulled and reverting to basic brown colour" (straight up, that's exactly what it says!).

A Mauritian sun came up, yellow, hot and blazing as I muzzily awoke from our Mauritian sauna bath. Glancing at my table-bound Thailand diver's wrist watch (which I never, incidentally, actually wear) I saw that it was already 7.30am. Three small yellows with black wing edges (*Eurema floricola*) flitted over into our tarmacked yard. Due to some quirk of Mauritianity, this exceedingly widely distributed type of *Eurema* has no common name, whereas the uncommon *E. brigitta* is called the Broad-bordered grass yellow, an apt description, although I refuse to tell you why. So why not dub the former species the Narrow-bordered grass yellow? Ask me another.

There's plenty of other food for thought on Mauritius, too. A Banana leaf-roller is not a sneaky looking character with a squint in a New York



subway about to sniff the contents of a pooter into a decaying leaf prior to having a quiet smoke, but a fat skipper (*Erionota thrax*), while a Common leopard (*Phalanta phalantha*) is a fangless nymphalid. Small wonder that when a species is in danger of extinction due to its name being excluded from a conservation list because it hasn't got one or it's in the wrong category, they call for me. Remember my "Common chicken droppings on a doormat" over there is Sri Lanka? Sheer genius.

Gazing down from our third-floor balcony, out over the Allamanda shrub sprawling across our wall, its trumpet-like waxy yellow blossoms an invitation to every big black tropical carpenter bee that chanced to buzz by, I could view a vacant lot next to us with a charming sprawl of grasses, herbs, scattered acacia-like shrubs, and what looked like prickly thorn apple and probably was. All in all a "desirable property" at the top of that real estate agent's list who specialises in selling to fakirs with tents. Some lantana shrubs with their characteristic bunches of small trumpet-like orange flowers were surrounded by flickering bevies of *Zizula bylax* shrunk-jeans blues that flitted up into the air for a second or two, before perching on a tiny blossom, their pale undersides catching the sunlight. Lantana is their foodplant. The butterfly is the smallest species on the island, its wingspan scarcely reaching two centimetres.

The landscape, including the other houses that surrounded us, each with its inevitably padlocked gate whether the occupants were at home or not, looked sun baked and desiccated, even at this hour. Bougainvillaea in several different varieties sprawled across white walls. splashing the scenery with bright colours. Large African snails (Achatina fulica) with dark shells littered the paradoxically modern tarmacked roads where the sun had caught, and fried, them. In time their empty shells would turn pale, with reddish streaks. Staub says you can make a natty paper weight by pouring molten lead into their eightcentimetre-long shells but I haven't tried it. We're a bit short on lead over here. A flock of mynah birds, wattles and beaks pressed out of yellow wax, their plumage black and glossy as pall-bearers' top hats. twittered harshly at each other from ornamental palms with large green fronds and thin red trunks. Mynahs were introduced on Mauritius on the 1760s to control locusts. If you ask me, the locusts might have been a better bet: they are rather more tasty when kebabed.

Doves cooed from telephone wires and electricity cables as a cockylooking bird grandly known as a Red-whiskered bulbul jumped on to our wall and cast a beady eye up at the grey-bearded coot gazing down



at him. On Christmas morning I was up to film him and his mates eating bananas but at the time I felt a catapult might have paved the way towards a decent filling for my breakfast omelette. A movement behind me stirred the hot, lethargic air. Kalúla had risen from his gecko dreams. He was wearing nothing but a pair of flimsy underpants and, with his youthful weightlifters physique, was in danger of getting killed in a stampede. I shoved him inside as the neighbours' wives saw their husbands off through unlocked gates and gazed about them with beady eyes.

We had a meeting with the Ministry of Agriculture and Mauritian Wildlife Trust at 9am. Joe arrived promptly at 8.30am, tooting his horn beyond our garden gate for which, of course, we had to find the key. Hoppity-skippittying on our bare feet across the burning hot tarmac, we managed to get even the large Betacam video camera and its tripod into the car boot. The last thing I did was to take a shower, as I sweat a lot and I abhor arriving at meetings looking like a stewed prune. On the way to the Ministry, which was next to the University of Mauritius, I had a good chance to view the scenery from the road (as distinct from a descending airliner) and to "weigh-up" the island biologically. As erosion has gradually whittled down the original volcanic mountains of Mauritius, huge, startling, razor-edged outcrops of rock have been left, so that the general impression of the island is one of gently undulating plains ending abruptly in the sudden defiance of solitary unclimbable peaks. The play of light and the backdrop of sky, foreboding cloud, setting sun, or eerie dawn light behind these intrusive crags is straight out of Genesis. Whatever time of the day one looked at a familiar mountain it gave cause to drag out one's camera. Much of the land spread out at their feet was now occupied by sugar cane, a money-spinner that is causing the Mauritians to plough up their tea plantations and to turn the lowlands into a monotonous landscape, a monument to the ubiquitous, greedy money freaks of our time. Huge, flat-topped flamboyant trees festooned with complicated scarlet blooms, line the roadsides. Flowering only around Christmas time, they are even visible on the lower slopes of distant mountains.

At the Ministry we met Mr Mungroo and his assistant and also Vikash Tatayah, who works for the Mauritian Wildlife Foundation – famous for having saved the Mauritian falcon (*Falco punctatus*), Pink pigeon (*Columba mayeri*) and Echo parakeet (*Psittacula eques*) from extinction and staffed by dedicated conservationists like Vikash. The MWF is also helped out by volunteers from the UK, among other places. There are



two small islands off Mauritius that I particularly wanted to visit. One was called Isle aux Aigrettes and the other Round Island. The British and the French fought for supremacy of the islands for centuries and this is apparent in the casual way the locals have of mixing the two languages; their Creole dialect is something else altogether. We learned, with regret, that it would be impossible to visit Round Island unless we had a helicopter and, besides, the authorities were reluctant to set anyone at all down on the island which boasts, among other things, Mauritius' two last remaining species of boa constrictors, Casarea dussumieri and Bolyeria multicarinata. Visitors were likely to bring diseases to the island which might conceivably wipe out the last remnants of the indigenous Mauritian fauna. Apparently there was a young English volunteer in Mauritius who was mapping the invertebrate fauna, including molluscs, but in the event we never got to see him. But we did get to see the famous black gorge area, in which suddenly in 1974, the Mauritius kestrel reappeared after being thought extinct. Even a jaded old nincompoop like me, who prefers viewing birds succulent and crispy through an oven window, could appreciate the sensation that had been caused among the ornithological fraternity!

Walking back through the university area, I was intrigued to see large numbers of dragonflies flitting about over shrubs and lawns. The owner of a large field in Finland, I have had countless *Aeschna* dragonflies establish territories on our property in late summer and appreciate that this helps to disperse the population and prevent the inbreeding that might occur should all individuals fly up and down the same lake shore, so I assumed this display of aeronautics had the same purpose. There was not a lake or pond in sight.

To buy me a pair of shorts, Joe dexterously drove through the diesel fumes from buses, reckless overtaking, absent-minded pedestrians, and hideous congestion of the towns in the Mauritian interior, without moaning (unlike myself later) that he couldn't see anything interesting because it was impossible to keep his eyes off the road for an instant. Two-thirds of the island's populations are Hindus, most of the remainder being Creoles or European French, and driving standards are gaily on a par with this odd admixture of folk. Having said that, I must confess that the courtesy shown to people trying to enter the fracas from a side street is far in advance of that normally shown by badtempered Europeans. Joe had a cold beer at "our place" and departed, leaving me to catch up on some note making and Kalúla to turn on the TV set from which, inevitably, the rhythmic strains of Sega music issued



forth. Sounding slightly sad, Sega is one of the things that the Mauritians go in for in the grand style and in the evenings most of the hotels put on a show of the original slave dancing that accompanies it. We just enjoyed listening to it on our television set back home as we took care of other tasks and I scooped up whatever landed under our living room light like an undernourished lizard. Almost the only other kind of programme on Mauritius TV seemed to be the Indian love stories with their inevitable girl and boy in love theme. I myself like listening to Indian instrumental music. However, after the noise spewed out by the yard pop music we are forced to listen to everywhere nowadays, anything provides relief, even a few minutes of the "whining cat" sopranos that Indians have a passion for.

As I've said before, during evenings in the tropics I am often at a loss for something to do, so that it was with joy that I greeted the rising sun next morning. The nocturnal heat in our room had not abated but the minuscule mosquitoes were seeking out dark places in which to rest, having had a fine old time pimpling our arms, despite the draught from two table fans strategically placed on the floor. After a shower I went downstairs to brew up some instant coffee, unlocked the windows, front and rear doors, and felt free again. Birds cooed and twittered. A late gecko did a fair imitation of Kalúla gecko-clicking. The tarmac out front was already hotting up. Our night watchman had gone home and the day watchman had not yet arrived. I looked at the front garden wall, fully expecting an armada of pirates to come over it armed with cutlasses and demanding our credit cards now that our defences were down. Instead I found a pint-sized dinosaur - a craggy looking beast with an emaciated grey body, long delicate fingers ending in sharp claws, and a whippy tail. He ran diagonally up/across the wall for a metre or so before pausing to stare at me over his shoulder. Mauritius is the classic case of introduction going wrong and this beastie - an agama lizard - was no exception. His ancestors had come from Java, introduced in 1899 for the purpose of biological control, of what even Staub fails to mention. With their prehistoric looks, tropical agamas scare the pants off tourists straight from European cities.

For their part the tourists go round, their ample stomachs shown off to perfection in tight shorts and bursting tee-shirts, thrusting their pocket cameras at the lizards who, inevitably, are well out of range before the fat forefinger descends on the shutter button. Butterflies, disturbed on flowers, must make an even smaller dot on a family album print. You've heard it all umpteen times, "This 'ere now, this 'ere's that



butterfly I was telling you lot about . . .", while you mumble appreciatively at what appears to be a speck of dust against the (inevitably tilted) horizon. Shortly afterwards, your host is laughing uproariously over the next print in a regrettable stack of several thousand: you know the one I mean, the "Fuzzy logic" shot taken just before old Jimbo flaked out from too many rum punches. The fuzziness of this annually repeated print has to be seen to be believed, which is why one's host is at such pains to describe the incomparably trite situation to one. Without the verbal support, one could, one feels, be looking at a dissolving footprint in November mud, the print the lab has made of the 'film loading shot" (number 0), or a fat, juicy close-up of one of Keith Floyd's exotic soups. Still, one should not jest: but for these stalwarts and their tendency to bang off shots of anything that takes their fancy (which is actually what amateur photography is all about), the price of a film and processing would be several times higher than it is.

At the risk of filling up the rest of the *Bulletin* I had better draw attention to the fact that, like the Javanese agama lizard, almost every animal on the island of Mauritius seems to have been imported from somewhere else, and that includes Man. There are giant snails from Madagascar, a blind snake from India, the Indian wolf snake (also known as the Couleuvre, just to confuse the European French herpetologists), the Outdoor lizard (a gecko from Madagascar), Elephantine tortoises from Aldabra (arriving around 1833), the radiated Madagascan tortoise, the soft-shelled Chinese turtle (no prize for guessing its origins), the red-whiskered bulbul and the Indian mynah (commandeered to prey on locusts), the rock pigeon, the common quail, the guinea fowl (ushered in by the French in 1729), the village weaver, the house sparrow (brought from India by British troops), the Indian house crow (sneakily arriving off its own bat in convenient ships), and so on and so forth.

On the cuddly, fur-bearing side, we have the introduced black rat (introduced by whom?), the house mouse, the shrew, the Madagascar tenrec (more of him later), the Javanese macaque, the mongoose (reintroduced in 1899 to control rats carrying bubonic plague), a deer, the rabbit, cattle, goats, pigs, horses, asses, cats, dogs . . . and some endearing others who wouldn't be on the island of Mauritius 2000km from the eastern shore of Africa but for Man's generous habit of carrying either stowaways, or something that catches his fancy on a free (if one way) ticket.

On this bright morning, the sun hot on my bare back, I wandered over to the side wall and peered over it. Several Zizula hylax blues



were active around flowering bushes, their movements so fast you couldn't see the insects unless they were in the air, a set of miniature horses on an out-of-control carousel. A white butterfly was supping nectar at a lantana flower. I didn't even have to rush to fetch the book to identify it, as there are only two larger pierids on the entire island. Catopsilia florella and C. thauruma, the former being a lot more common. In that curious one-sidedness of Mauritian entomology, C. thauruma has no English name, but C. florella is known as the African migrant. If you have read any of my previous articles, you may have heard the generic name "Migrant" before; it is often applied to species of Catopsilia. Then known as Papilio thauruma, the African Migrant was first recorded by the famous butterfly man Fabricius in 1775; C. thauruma had to wait for Rekirt to poke his forceps at it in the Philadelphia Academy of Natural Sciences in 1866. Fascinating history, don't you think? No? - well, there are few things worse than being a candidate in a vital examination set by a dried up old prune like myself.

The heat is beginning to tell, even at that hour of the morning. Kalúla's bleached torso appears in the doorway as he glances up, scratching, at the roof of the front porch. Disappointedly perhaps, the geckoes have gone to sleep. A solitary black beetle, rotund as Robby Coltrane, sits on the wall. In the adjacent vacant lot the "white", having filled its tum, speeds off in that erratic way which pierids have. European bug-hunters tend to think that nymphalids can put on a fine burst of speed when disturbed, but it is my experience that in the tropics pierids are the most difficult butterflies to catch. Unlike swallowtails, which simply flap rapidly when they wish to, whites and yellows always seem to be bent on mailing a pools coupon two seconds before the post office closes. If you intend catching a few, don't trust to luck – get yourself a sawn-off shotgun.

African migrant males are in fact white, while females have both a yellow and a white form (so you can call a "yellow" a "white", if you feel like it – Oh, dear, dear me!). Both forms are common. Perhaps somebody could give us some comments on this kind of dimorphism, confined to one sex only. Why does it occur here and also among some Palaearctic *Colias* species? To continue, looking at the plate in Williams' book it is obvious that the dark discal spot on the latter has the same kind of spot, her yellow wings are so heavily decorated with brown that even I could distinguish her. In view of what I have just said about the erratic flying habits of tropical yellows, it is obvious that these details only apply to an etherised or dried specimen. Before you



drop off your chair in mental exhaustion, this copy of the *Bulletin* sagging slowly towards the floor, what I wanted to say was that by a process of elimination the white butterfly I was looking at on the lantana bloom was almost positively a male of the "yellow" *C. florella*, or African migrant. Why not the white form of the female? Well, because of the erratic way it flew off, hell bent on – to put it delicately – breeding, whereas female butterflies tend to potter around among vegetation, such as it was on the adjacent wasteland.

Some identification booklets have been published, especially on wild flowers, based on colour, which is not a bad idea. No need to go in for this style, though, in Mauritius. Since there are only 27 species of butterflies, you can record such sightings as "an orange coloured nymphalid flew past close to the bougainvillaea bush spewing over our front yard", a statement forming part of my laptop notes for the day and time in question, and thus with reasonable certainty identify the absent specimen at your leisure. So let us do so. I have previously given some unsolicited publicity to Hympolimnas misippus in connection with at least two localities previously: Sri Lanka and East Malaysia (North Borneo). Even Williams mentions it as being found "throughout the Old World tropics". It is a classic mimic in relation to the female's highly variable coloration, and a wealth of information has been written about the species and its genetics. While being known as the Danaid eggfly in most parts of south-east Asia. H. misippus is respectfully called the Diadem in Mauritius. Perhaps wisely, the darkwinged, white-blotched male (the eggfly) keeps to himself, rather like a wizened parson who's privately concluded that Darwin was right after all.

Williams has a quaint way of describing the mimicry associated with this wily species, a sort of tribute to nautical people living on islands the world over. He says that the female Diadem "deceives its enemies by flying under false colours." Entomologically, the situation is intriguing, as there are two forms of the female Diadem present on Mauritius, corresponding to the two forms of the model (*Danaus chrysippus*, African monarch or African queen), whereas in fact only one form of the model (*D. chrysippus f. chrysippus*) actually occurs on the island. Obviously *H. misippus* arrived in Mauritius from somewhere else rather recently and has not had time to "lose" some of its evolved mimicry. Meanwhile, I'm dying of thirst hanging over our garden wall, so let's get this over with.

Some "blues" arrested my attention. These were larger than the dainty Zizula, being of the long-tailed blue type, although smaller than



Lampides boeticus (Long-tailed blue), a species that is common in gardens on Mauritius but less frequent elsewhere. The smaller species is Leptotes pirithous, known locally as the Common blue, which occurs on wasteland, especially where there is lantana and herbe condé (sounds like an over-priced French salad but is called Cordia curassavica in Latin). I plumped for L. pirithous, last seen by yours truly in Corsica in 1962.

I'd hate to think you feel I am forever enjoying a tropical holiday at my company's expense without putting in an iota of effort now and then. Why, way back in 1988 I remember actually loading a camera with film. . . When Joe drew up outside the padlocked garden gate, we loaded into his roomy car the equipment, several bottles of water, my books, and weight-lifting Kalúla, prior to prising the latter out again to relock the garden gate. Why make the effort when one has an assistant? Only around ten years my senior, Joe had decided mine were the only brains on our team worth cultivating, and so he spent his time trying to interest our "sheik" in any prospective wife who happened to be passing our stranded automobile in the traffic, or (later) in trying to get Anetta's creamy white complexion to blush at his latest lewd joke. Our first stop was at the short road leading to Casela Bird Park, where a single flamboyant was in bloom, its scarlet blossoms contrasting vividly with the razor-backed mountain in the background. I needed some scenic shots, and this proved an ideal place as, unlike in Europe, there were no cables to ruin the landscape. I made a mental note to visit the park later, which I eventually did.

Close to the sea on the east coast there were what seemed to be planted mangroves so, not knowing what eventually we were letting ourselves in for (my shooting script only covered the basics of conservation on the island, as I had had no opportunity to visit the location and put together a story board in advance), we stuck our feet firmly in the mud and filmed these from right, left, centre and thousand-fold. I hate video contraptions with their black and white viewfinders. Try finding a green lizard in green vegetation and I'm sure you'll chuck yours over the nearest hedgerow, as I have often felt like doing with 12,000 quids worth of my own equipment. However, the tape seemed to be going round and the focus appeared correct, which is saying a lot, as on a Sony Betacam-AP little expense had been wasted on the viewfinder image. The contraption does – to be fair – produce a superb picture on the actual tape.

Some time later we turned up a winding switchback of a road leading up into the interior. Just before we all developed seasickness,



Joe stopped for us to do some lovely pan shots of the east coast, its sea displayed in a wide variety of colours according to depth, bedrock and seaweed, and its land surface speckled with low trees and bumpy mountains. Passing the Chamatel waterfall, we found the Chamatel Coloured Earth location. Here an Australian film crew was making a recording, with a bush-hatted lady up front spouting into a microphone. When they left, I was able to see that the peculiar reddish earth did in fact have seven different colours. A Swedish maiden in shorts and tee-shirt obligingly wandered among this intriguing landscape, giving me some good telephoto shots of which she was blissfully unaware. May I make a point: filming an unsuspecting public sightseeing is so vastly different from hounding celebrities, the possibly tragic consequences of which we are now only too well aware.

to be continued . . .

#### National Moth Night 1999

In conjunction with Atropos and InsectLine

1999 sees the launch of National Moth Night. On the night of **Saturday 17th July**, moth enthusiasts throughout the UK are encouraged to set their light-traps up and gather information about what is on the wing in their area.

National Moth Night, jointly operated by *Atropos* and *InsectLine* is the first of what is hoped will be an annual event.

The aims of this event are as follows:

- 1. To encourage widespread moth recording and to gather useful data.
- 2. To stimulate wider interest in moths and raise their profile amongst the public.
- 3. To raise funds for moth conservation projects.

We would like as many people as possible to run light-traps in as many different areas as possible on the night of 17th July 1999.

Anybody interested in becoming involved can hear further details on the National Moth Night Information Line (0891 +46862 – note that calls cost 60p per minute. The proceeds will be donated to moth conservation projects).

Events can be promoted on the National Moth Night Information Line by telephoning the InsectLine Hotline (01565 722928 – normal rates apply), leaving basic details and a contact telephone number.

# THE PHASMID STUDY



Treasurer/Membership Secretary
Paul Brock. "Papillon", 40 Thorndike Road, Slough, Berks SL2 1SR. England.

Since its formation early in 1980, The Phasmid Study Group has expanded to more than 500 members in 20 countries, including people of all ages and ranging from beginners to professional entomologists. The purpose of the group is to encourage studies of all aspects of PHASMIDS (Stick & Leaf Insects). Since phasmids have received little attention until recently, there is scope for anyone to provide new information.

**NEWSLETTER** – The newsletter is issued quarterly and contains news items, livestock information, details of exhibitions and meetings, and a variety of short articles on all aspects of phasmids.

**PHASMID STUDIES** – This is issued biannually, in June and December. It contains longer articles on all aspects of phasmids, with an emphasis on natural history, captive breeding and behavioural studies. Abstracts and occasionally reprints from other publications may also be included.

**LIVESTOCK DISTRIBUTION** – There are now about 100 species of phasmids being kept by members, and new ones are continually being added - many of the Group's species are not available commercially. The Livestock Co-ordinator and Supplier's Panel help to distribute surplus stock to members who want them. Members are not permitted to sell any livestock they obtain through the group.

**MEETINGS** – Every year at least two meetings are held, usually at the Natural History Museum in London. Here members can talk with fellow enthusiasts and give and receive livestock. The Group also provides displays at several entomological exhibitions.

**NEW MEMBERS** – A list of members and a species list are sent out on joining, together with Newsletters and Phasmid Studies already issued in that year. To ease administration, membership information is stored on computer and is subject to the restriction of the Data Protection Act.

MEMBERSHIP APPLICATION FORM. The subscription for the year 1999 is £5.00 (U.K),

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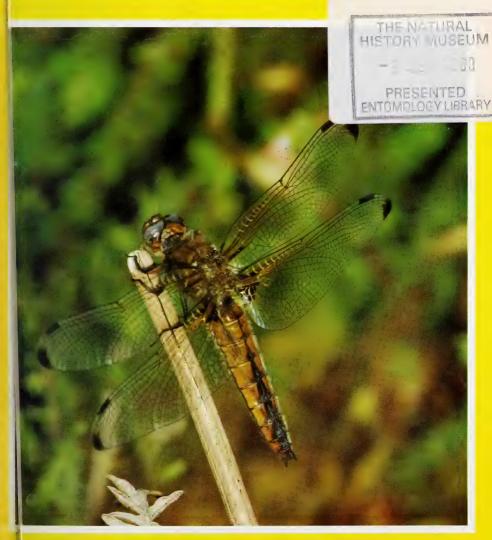
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# Bulletin

of the Amateur Entomologists' Society

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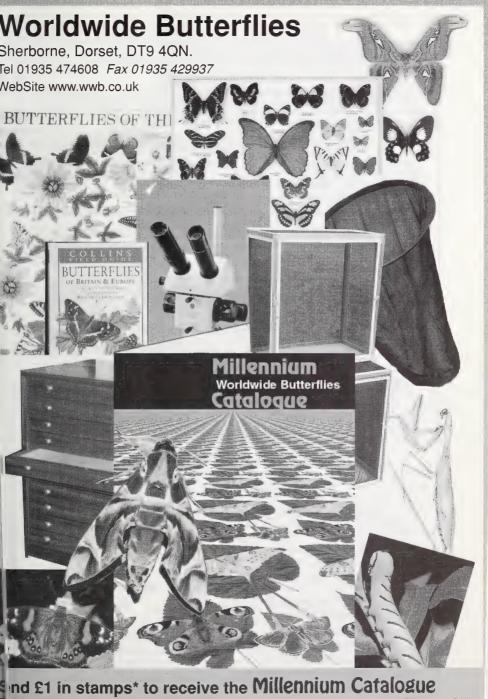
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Bulletin
of the Amateur Entomologists' Society
Volume 58 \* Number 425 August 1999

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The cover of the *Bulletin* features a female Scarce chaser, *Libelluva* fulva.

This species is at its northern-most range in the United Kingdom and can be seen locally in southern England and East Anglia. The species occurs around slow flowing rivers and streams and occasionally lakes, providing that there is good marginal vegetation. The species flys only for a short period, between the end of May and the beginning of July.

Photo: Nick Holford.



Volume 58 • Number 425

August 1999

#### **Editorial**

This issue of the *Bulletin* contains the 1998 exhibition reports from those members who exhibited and provided a description of what they showed. Of course, this year's event is now just around the corner, and we are looking for members to bring something along with them for display. All you need to do is to complete the table booking form and return it to me as soon as possible. A pass will then be sent to you before the event to gain free entrance to the show. I would like to remind those Junior members that read the *Bulletin* that there is an award for the best Junior exhibit at the exhibition – so start preparing now!

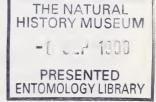
The exhibition is larger than ever this year, and I appeal to those members who are able to get to Kempton Park early on Saturday 2nd October and are willing to help with the set up to get in contact with me. We really do need all the help that we can get in setting up the two halls and conforming to the fire regulations, so the more hands that we can get the better. If you are still around after the event, you will be most welcome to join us for a drink for your efforts!

There is still some space remaining for traders, and anyone who has a last minute need can book using the table booking form with this *Bulletin*. You will have also noticed our exhibition flyer – if you know of somewhere where we could send a few for promotional purposes, once again please get in touch.

I hope to see you at the exhibition in October!

Wayne Jarvis







#### Saturday 3rd October 1998 – The Annual Exhibition: a report

The day started dark, cold and somewhat wearily at 6am when the first of us arrived at the gates of Kempton Park to begin the setting up of the exhibition. Our greatest thanks go to those who came along to help – the exhibition would not run without this valuable source of assistance. We also thank those who helped during the day and at the end in helping to clear away.

The venue was much more comfortable this year, following the previous year's building site problems and we received nothing but praises about the new look of the venue.

The queue started early, and by opening time at 11am, it must have been one of the longest that we have had for a number of years – thank goodness it didn't rain! Admission figures were up on previous years as were the bookings by traders – indeed the hall was filled to capacity and as a result we have decided to enlarge the exhibition to two floors this coming year.

The number of exhibits was down to 23, which is disappointing, although for the first time for a number of years we had two junior exhibits, by James Rawles and Alexander Gardiner. We decided to jointly award the Ansorge Award to them for their excellent posters and exhibits. We think that the exhibit part of the exhibition is an extremely important one, and urge members to book a space for this purpose at this years event. Details can be found on the exhibition booking insert with this *Bulletin*.

Reports received from those who exhibited at the exhibition are given at the end of this introduction. We hope that you will be tempted to bring along an exhibit this year on 2nd October and we would welcome any form of assistance in helping to set up in the morning. If you are able to help, please get in touch with the Society as soon as possible – we do reward helpers!!! If you are not able to help, then we hope to see you at the exhibition.

#### Paul D. Brock (4792)

Displayed three species of stick-insects found in September 1998 in the Cape Suburbs, South Arica, all located by cottage accommodation at Constantia Nek, near Cape Town at the edge of "Fynbos" (characteristic vegetation of the southern and south-western Cape Province, South Africa). Two of the species were also located in various other localities in stages ranging from newly-hatched nymphs to adults.



- *Macynia labiata* Thunberg, 1784) an attractive small green species, rather plump in the female (42-56mm).
- *Phalces longiscaphus* (de Haan, 1842) a more elongate insect, often brown in the female (60-80mm).
- Carausius morosus (Sinéty, 1901) one adult female, an established (although unreported) "alien" in the Cape Suburbs, probably originating from stock reared by Le Feuvre in the mid 1930s this insect is the commonly reared "Indian" or "Laboratory Stick-insect".

These insects feed on many plants in the wild and in captivity; they are currently feeding on bramble, heather and *Leptospermum*. An article for the *Bulletin* is in progress.

Also displayed here were photographs of insects seen in the Cape Suburbs, including a spectacular bush-cricket.

#### Alexander Gardiner (5249)

Pond Study

Photographs, drawings and writing about the invertebrates that have colonised our garden pond since it was dug earlier this year, with a list of species identified.

Ansorge Award Winner

#### Brian Gardiner (225)

The Graham-Smith's Large cabbage whites (Pieris brassicae)

In 1930 G.S. and W. Graham-Smith published an account of variation in the Large white butterfly, *Pieris brassicae* (L.) based on aberrations they found in Aberdeenshire. Exhibited are original specimens as named by them and on which their paper was based. Also shown in this case are some modern examples as bred by me in the 1960-70s which show what an enormous variation in the extent of the black markings can occur in this species, and since one can produce a complete graded series ranging from almost no black markings to very heavy ones which run into each other one must question as to when an aberration becomes an aberration clearly enough to have a separate name.

#### Martin Gascoigne-Pees (????)

Variation in European Pyrgus alveus and Pyrgus serratulae

A small case showing variation in ground colour, size and markings of these two species of butterfly.



#### David Keen (3309)

Insects from a Spanish garden

My friends Judy and Trevor Dainton with Judy's father, Jack Wells, moved to Spain in April 1997. They bought a villa within its own land on the outskirts of the village of Mezquitilla near El Saucejo in the Province of Seville. The plot of land is surrounded by Olive groves and, indeed they have planted their own trees since they moved in.

The garden itself is contained within a fenced area but Trevor's land runs down a slope and, except for the Olive and Almond trees that he has planted, is uncultivated. The slope is very steep and walking on this part of the land is difficult. Beyond our friends' land the ground slopes steeply to a river in the valley below.

Along with my wife, Wendy, I have spent three holidays with our friends in the villa – two weeks in September 1997, a week in January 1998 and two weeks in May 1998. The insect specimens displayed represented some of the species that I have observed during my spells in Spain. This will give some idea of the different groups that have been encountered.

Of particular interest were:

- Two species of Mantis Iris oratoria (Linn.) and Mantis religiosa Linn.
- Paper wasps (Polistes) and nests.
- Grasshoppers and Crickets, including two Gryllus bimaculatus.
- Two large Tenebrionid beetles Blaps sp.?
- Some very large ants common throughout the garden but not seen indoors!
- A selection of butterflies and moths, including the Swallowtails, *Papilio machaon* Linn and *Iphiclides podalirius*.

Unfortunately, due to lack of time I have been unable to identify many of the insects that I found.

#### Roger Kemp (3152)

Mature Convolvulus hawk-moth larvae at Ford village, near Aylesbury. Buckinghamshire

On Friday 2nd October 1998, I was tidying up waste ground on the farm when I noticed a nearly full-grown *Agrius convolvuli* (Convolvulus hawk-moth) larva resting on its foodplant *Calystegia sepium* (hedge



bindweed) growing up a telegraph pole support. The colour of the larva was similar to that illustrated in Porter's book, *The Colour Identification Guide to Caterpillars*. The seemingly inactive larva was photographed and video recorded and I thought it safe to leave for a while. I decided to bring this find to the Exhibition, but on my return, the beast had gone. I searched frantically and found a second one only a few feet away from the first but smaller and much darker in colour. Wild larvae of this species are rarely found in the wild in Britain and it is said they seldom reach maturity. These two could be the rare exceptions!

(Full article appeared in Bulletin 58: 87, June 1999.)

#### Andrew Halstead (6346)

Queen Honey bee (Apis mellifera L.)

The queen bee on display was removed from a hive in 18.9.98; the bee colony needed a new queen because it had become bad tempered under the old queen. Queens can be kept alive outside a bee hive provided they are tended by worker bees. The queen is unable to feed herself directly from the honey provided in the wax cup. She is dependant on being fed by the worker bees. Note that the worker bees, which are distinctly shorter than the queen, often touch her body with their tongues. The workers pick up chemicals (pheromones) secreted by the queen and these are passed on through the colony when worker bees exchange food. It is through this mechanism that the queen controls the colony and maintains her position as the only fertile female. If the amount of pheromone passing through the colony falls too low, because of an ageing queen or overcrowding, worker bees will make preparations for swarming and the production of new queens.

#### Goat moth larvae (Cossus cossus L.)

The larvae on display were brought for identification to the RHS Garden at Wisley, Surrey on 3.9.98. They had been found in the trunk of a birch tree that had been planted as a mature tree within the last 12 months. It is quite likely that such a tree would have been imported, possibly from Germany, as there are few nurseries in Britain that produce mature trees. Goat moth larvae usually take up to five years to complete their feeding in the trunk and larger branches of various deciduous trees. If the tree was imported then the size of the larvae indicates that the eggs were laid while the tree was in its country of origin.



The long larval feeding period is due to the poor nutrient status of wood. The larvae can be reared quite easily on a diet of brown bread, apple fruits or carrot. On this type of food they can complete their feeding in a year.

Two mature goat moth larvae were also found in the Wild Garden at Wisley Garden in early September 1998. They had emerged from the base of an oak trunk and were crawling around before going into the soil where they will pupate.

This is the first sighting of goat moth at Wisley Garden for at least 26 years.

#### Nick Holford (3804)

A Noctuid moth new to Britain. Discovered in 1990 in Sussex by the late Prof. Colin Smith

This species of moth has a wide west Mediterranean distribution, including northern Italy and North Africa. It is localised in the Iberian Peninsula and Mediterranean France. Its range and frequency are probably much greater than the records show. The flight period starts 30 minutes after dusk and last for 30 minutes. Its habitat is one of dry, well drained heath or open woodland with a warm southerly aspect, and with a ground vegetation that includes *Erica* spp.

The exhibit showed upper and undersides of original specimens and descriptions of the key identification features, which were also indicated on drawings. The various stages of the life cycle were described, with colour pictures from the original article describing the discovery.

#### Reference

Smith, C. & Haggett, G. 1993. Agrochola haematidea Duponchel (Lepidoptera: Noctuidae, Cuculliinae) new to Britain. Ent. Gazette 44: 183-203.

Colin Smith was Professor of Spanish at St. Catherine's College, Cambridge, so his moth collecting primarily took place in holiday time. At the beginning of the autumn, following his retirement, he went light-trapping at a time of the year that he had previously been unable to. He set up his light-trap on a common in Sussex on 10th October 1990. Several specimens of a moth that he did not recognise were amongst the first to arrive. The collections at the Zoology Museum at Cambridge had nothing similar, so Colin returned to the site on 12th and 16th October. These trips showed the moth to be common and therefore probably not a casual migrant. The moth was identified later in October by Martin Honey at the Natural History Museum. Later, Colin named the moth as the Southern chestnut.



Colin tried to rear caterpillars from eggs laid by captive females, but they died through lack of the correct foodplant. Literature searches had shown there to be no information concerning the early stages of the species. Martin Honey suggested the foodplant might be native *Erica* species (Heathers). In June 1992, late instar larvae were found on *Erica* tetralix and *Erica* cinerea, and these were successfully reared. It later transpired that mature larvae had been found on *E. arborea* in Andalusia in 1991/2.

This last paragraph describes the purpose of the exhibit!

Colin Smith was an amateur entomologist in the truest sense of the title. It shows what an amateur who is prepared to set his trap up "in the wrong place at the wrong time of year" might find! (During October, most moth collectors concentrate on deciduous woodlands for resident species, and coastal areas for migrants. They do not usually trap in heathlands. This may well be why the species had remained undiscovered for so long.)

#### Keith C. Lewis (3680)

Notable Coleoptera found in 1998 from the Conservation Area, Kew Gardens, Richmond, Surrey

On display were:

- An aberrant: Harpalus azureus (F). Found under bark. June 1998.
- Scybalicus oblongiusculus (Dj). Found under beech bark. June 1998. (Outside Conservation Area.)
- Rhytideres plicatus (Gy). Beaten from Black walnut Juglans nigra (L.). July 1998.
- Otiorhynchus parvicollis (Ol.). Swept from mixed grass and flora. July 1998.

#### Roy McCormick (3375)

Interesting moths seen in Devon in 1998

The numbers of records referred to from numbers 0018 to 1973 show the total number of sightings.

0018 Helialus fusconebulosa DeG. Mapwing swift.

ssp. fusconebulosa DeG.

Seen at Black Tor, Dartmoor on 7.7.98; there are 21 other records of the species in Devon.



- 0386 Tebenna micalis Mann.
  - Larvae, pupae and empty pupa cases were found on Dawlish Warren on 18.8.98; Bob Heckford has found hundreds on various sites in the south of Devon.
- 0764 *Pseudotelphusa scalella* Scop.
  To light at Hembury Woods, Dartmoo

To light at Hembury Woods, Dartmoor on 16.6.96; the specimen was identified by Dennis O'Keefe and confirmed as new to the county by Bob Heckford; further examples were seen by him and Barry Henwood in 1997.

0987 Syndemis aeriferanus H.-S.

To light at Colaton Raleigh Common on 26.7.97; the specimen was identified by Dennis O'Keefe and confirmed as being new to Devon by Bob Heckford.

1297 Crambus uliginosellus Zell.

Seen in numbers at Colaton Raleigh Common on 20.6.98; the species was seen at this locality in late July 1997.

1370 Sitochroa palealis D.&S.

Taken from All Hallows School near Rousden on 13.8.98 and from Thatcher Point, Torquay on 18.8.98; records of this species in Devon are few

1384 Anania stachydalis Germ.

Seen at Bramble Wood near Holsworthy (commonly) on 30.6.98; Great Torrington area on 4 and 5.8.98 and at Hakeford, North Devon (commonly) on 27.6.98. It has also been seen near the Lyd Valley on 18.7.98. Larvae (9) were found at Bramble Wood on 12.9.98.

1441 Oncocera semirubella Scop.

Two seen at All Hallows School, Rousden on 2.7.98 with a number being seen at the same locality on 13.8.98.

1443 Pempelia genistella Dup.

One taken at All Hallows School, Rousden on 13.8.98; attempts to find the larvae at Dawlish Warren, where a number of adults have been seen in previous years, have so far failed.

1642 Gastropacha quercifolia Linn. Lappet.

An early example seen at Teigngrace on 14.6.98 by a member of Devon Moth Group. There are 20 other records.

1658 Cymatophorima diluta D.&S. Oak lutestring

ssp. hartwiegi Reisser

Seen in numbers at Stoke Woods near Exeter on 29.8.98. There are 14 other records of the species.

1676 Cyclophora annulata Schulze. The Mocha

Two females to light at All Hallows School. Rousden on 13.8.98. There are sightings of the species at other sites in 1998; there are 17 other records of this species.



- 1701 *Idaea sylvestraria* Hb. Dotted-border wave
  Around six were seen and confirmed at Colaton Raleigh Common on
  20.6.98; this is an under recorded species with only six more records.
- 1716 Rhodometra sacraria Linn. The Vestal Seen at Colaton Raleigh Common on 20.6.98, Lyd Valley area on 20.6.98, Teignmouth on 31.3.98 and at other sites in 1998. There are 40 other records of the species.
- 1720 Orthonama obstipata Fabr. The Gem Seen at Bramble Wood, near Holsworthy on 30.6.98, Great Torrington area on 4 and 5.7.98, Lyd Valley area on 20.6. and 18.7.98, Teignmouth on 28.3. and 16.7. with other sightings and other localities in 1998. There are 42 other records on file.
- 1766 Plemyria rubiginata D.&S. Blue-bordered carpet ssp. rubiginata D.&S.
  Seen at Lyd Valley area on 18.7.98 and at Okehampton, a specimen similar to the Scottish ssp. plumbata, on 1.8.98. There are 27 more records on file.
- 1774 *Colostygia olivata* D.&S. Beech-green carpet Seen at Thatcher Point, Torquay (worn examples) on 18.8.98. There are 20 other records of the species.
- 1804 *Perizoma bifaciata* Haw. Barred rivulet
  One at Ashcombe heathland, Teignmouth on 9.8.98. There are 20 other records on file.
- 1872 *Discoloxia blomeri* Curt. Blomers rivulet Seen at Ashcombe heathland, near Teignmouth on 9.8.98; All Hallows School, Rousden on 2.7.98 and Lyd Valley area on 18.7.98. There are ten other sightings on file.
- 1885 Abraxas sylvata Scop. Clouded magpie
  Two taken by a member of Devon Moth Group in the Lyd Valley area
  on 18.7.98; this is the first time I personally have seen this moth in
  Devon. There are five other records.
- 1949 *Ectropis consonaria* Hb. Square spot This white specimen taken at Stover Park, near Newton Abbot on 11.5.98. A further 26 records are on file.
- 1964 *Gnophos obscuratus* D.&S. The Annulet Seen at All Hallows School, Rousden on 2.7.98; Hartland Point on 25.7 and 5.8.98 and Thatcher Point, Torquay on 18.8.98; the light specimen shown is typical chalkland type with the remainder of the specimens seen being dark grey. There are 32 more records on file.
- 1973 Acherontia atropos Linn. Deaths-head hawk
  A specimen of this species was found stuck in a bee hive on 12.8.98,
  unfortunately the moth had been dissected by the bees and there was
  just enough of it left to identify. There are three modern records with 60
  other sightings from 1865 to 1970.



The number of records from here refer to modern additions since the 1970s.

- 2059 Diacrisia sanio Linn. Clouded buff Seen, commonly, at Colaton Raleigh Common on 20.6.98. There are 13 other records on file.
- 2104 Standfussiana lucernea Linn. Northern rustic Several seen at Hartland Point on 25.7 and 5.8.98; these were mostly worn. Nine other records are on file.
- 2127 *Xestia ditrapezium* D.&S. Triple spotted clay Seen at Hakeford, North Devon on 27.6.98, Lyd Valley area on 20.6 and 18.7.98 and Okehampton on 1.8.98. There are 34 other records on file.
- 2136 Naenia typica Linn. The Gothic One at Great Torrington area on 5.7.98. There are 32 other records on file.
- 2177 *Tholera cespitis* D.&S. Hedge rustic One seen at Shelston Tor, near Black Tor, Dartmoor on 22.8.98. A further 30 other records are on file.
- 2260 Conistra rubiginea D.&S. Dotted chestnut
  A female taken at Stover Park, near Newton Abbot on 31.3.98 laid eggs
  which were bred through with the majority being released back to
  Stover Park. There are nine other records on file.
- 2277 Moma alpium Osb. Scarce merveille du jour Three males were seen at Great Torrington area on 4.7.98; the following night I went to the same locality but at a different site and saw three more males. There are two records in 1984 and 1994. Historical records date from 1865 to 1956 and number six specimens.
- 2298 Amphipyra berbera Rungs. Svensson's copper underwing ssp. svenssoni Fletch.
  One positively identified from several specimens of A. pyramidea, at Stoke Woods, Exeter on 29.8.98. There are eight other records on file but I feel the species has been overlooked.
- 2357 Amphipoea lucens Fryer. Large ear
  Three taken for identification from Shelston Tor, Black Tor, Dartmoor.
  There are four positively identified records from other localities on Dartmoor; I thank Barry Henwood for his help with dissections of this and A. fucosa paludis which is found on our south coast.
- 2394 Stilbia anomala Haw. The Anomalous Seen at Shelston Tor, Black Tor, Dartmoor. There are 14 other records on file.
- 2397 Panemeria tenebrata Scop. Small yellow underwing Seen, commonly, at Compton, Torquay by a member of Devon Moth Group in May 1998; a visit was made to collect seeds of mouse-ear chickweed later in the year. There are 14 other records on file.



2408 Eublemma parva Hb. Small marbled

One, a female, taken in my garden at Teignmouth on 20.7.98; it refused to lay eggs; Peter Davey from Dorset reported that several larvae were found in that County but, despite a good search, I never found any in Devon. From 1844 to 1968 only seven specimens have been noted.

2415 Acontia lucida Hufn. Pale shoulder

One taken after being seen flying round Karl Bailey's garden in Thorverton; he believes that this could have been imported as a larva on mallow plants that he brought back from Cyprus in October 1997. Taken on 10.7.98. No other records.

2467 *Lygephila craccae* D.&S. Scarce blackneck Seen in numbers at Hartland Point on 25.7 and 5.8.98. There are nine more records on file.

Species taken or bred through from the Burren, Ireland, from 17 to 22.5.1998.

0942 Aethes piercei Obraz.

One of a number seen at our B&B stay in Kinvara.

1301 Crambus lathoniellus Zincken

The brown Burren form of this species was seen at most localities that we visited.

1373 Microstega pandalis Hb. Bordered pearl

Two of only three seen which came to our lights at Kinvara on the last three days of our stay.

1381 Anania funebris Strom.

The Irish form of this species were taken at Cappaghmore and Loch-na-Bron on 22.5.98.

1532 Erynnis tages Linn. Dingy skipper

ssp. baynesi Huggins. Ireland.

These were seen at most localities; taken at Cappaghmore on 17.5.98.

1541 Leptidea sinapis Linn. Wood white.

ssp. juvernica Will. Ireland.

Seen at most localities visited; taken at Loch Coolorta on 21.5. and Cappaghmore on 17.5.98.

1553 Anthrocharis cardamines Linn. Orange tip

ssp. *hibernica* Will. Ireland.

Seen at most localities visited; taken at Loch Coolorta on 18 and 21.5.98.

1574 Polyommatus icarus Rott. Common blue

ssp. mariscolore Kane. Ireland.

Very few of these were seen during our stay; this pair taken at Flaggy Shore on 22.5.98.

1790 Triphosa dubitata Linn. The Tissue

Taken as larvae at Loch Coolorta and Loch Bunny and bred through; they emerged around mid-June 1998.



- 1823 Eupithecia venosata Fabr. Netted pug ssp. plumbea Huggins. Ireland.
   Taken, in numbers, at Doolin on 17.5.98; on a return visit on 21.5.98, none came to our lights.
- 1834 Eupithecia vulgata Haw. Common pug ssp. clarensis Huggins. W. Ireland.

  The specimens that we did see at Kinvara were worn but a few were reasonable enough; taken at Kinvara on 19.5.98.
- 1894 *Semiothisa clathrata* Linn. Latticed heath ssp. *hugginsi* Baynes. Ireland.

  These were seen in small numbers at most localities and to our lights at Kinvara; taken at Cappaghmore on 22.5 and at Kinvara on 19.5.98.
- Odontagnophus dumetata Forder. Irish annulet ssp. hibernica Forder.
  Taken as larvae; a few at Loch Coolorta with several at Loch Bunny; although the larvae went down at the end of May, the imago's did not emerge until the first week of August 1998.
- 1982 *Hemaris tityus* Linn. Narrow-bordered bee hawk Taken as one of a pair *in cop*, we did not get a single egg out of the female. A number were seen flying at Mach 1 at Loch Coolorta on 18.5.98.
- 2051 Lithosia quadra Linn. Four-spotted footman Two larvae knocked out of buckthorn at Loch Coolorta produced these two fine female specimens on 6th and 11th July 1998. The first time I have set eyes on a female of this species.
- 2063 *Diaphora mendica* Cl. Muslin moth A pair of form *rustica* taken from a number that were seen at our B&B static lights at Kinvara; taken on 17 and 19.5.98.
- 2167 Hadena perplexa D.&S. Pod lover ssp. capsophila Dup.
   Seen at Doolin, Flaggy Shore and Kinvara in good numbers; these taken on 17.5.98 at Doolin.
- 2174 Hadena caesia D.&S. The Grey ssp. mananii Gregs.Several seen at Doolin on 17.5 with a few seen on 21.5.98; these taken on 17.5.98 and 21.5.98.

#### Dennis O'Keefe (8476)

Microlepidoptera – a selection of notable species taken or bred during 1998.

Celypha woodiana Barrett Bred ex Viscum (Mistletoe) Stoke Orchard, Glos.

Eucosma metzneriana Treits Wilmington, Kent 6-12.6.1998 Apparently established in this locality. Only five previous records for Britain.



Ancylis tineana Hübn.

Bred ex *Betula pubescens*. Rannock, Perthshire.

Athrips tetrapunctella Thunb Tulloch Moor, Inverness.

*Xystophora pulveratella* H.-S. Tulloch Moor, Inverness.

Coleophora wockeel<sup>1</sup> <sup>1</sup> Zell

Bred ex cases on *Betonica officinale* (Wood Betony) Dunsfold, Surrey.

Phyllonorycter viminetorum Staint.

Bred ex *Salix viminalis* (Osier)

Sandwich, Kent and Maldon, Essex.

Dialectica imperialella Zell

Bred ex Symphytum (Comfrey)

Wicken, Cambs.

Parectopa ononidis Zell

Bred ex *Trifolium repens* (Red clover)

Beltinge, Kent.

Antispila treitshkiella F von R

*petryi* Martini

Bred ex Swida (Dogwood)

Shoreham, Kent.

Nemapogon picarella Clerck

Bred ex Fungus on Alder

Struan, Perthshire.

Ethmia funerella Fab.

Bred ex Symphytum (Comfrey)

Darleydale, Derbys.

Acanthopsyche atra L.

Female bred from case on Pine trunk, male assembled to female when taken to site two days later.

Normandy, Surrey.

First Surrey record this century.

#### James Rawles (11063)

Stick-insect display

The main part of the display consisted of a large glass tank full of stick-insects. The species were *Eurycantha*, *Aplopus*, Macleay's spectre, Pinkwinged and Indian stick-insects.

On top, in a small jar, was a small Kenyan mantis called "Snap".

I also purchased some African land snails and Death's head cockroaches at the exhibition, which I put on display. The *Eurycantha* 



had been kindly given to me that day by a man from the Phasmid Study Group.

I also exhibited a glass-topped display case containing various insect skins that I had collected (dragonfly nymphs, cicada, mantis, Macleay's spectre). The case also contained Praying mantis egg cases, a section of a wasps' nest, and pictures from an insect guide.

#### ANSORGE AWARD WINNER



Figure 1. AES Registrar, Nick Holford is shown the Ansorge Award Winners display by James Rawles.

#### P.J.C. Russell (8977)

Butterflies from Sicily

A case of butterflies taken in Sicily during mid-May showed all the endemic forms: *Melanargia pherusa, Hipparchia aristaeus blachieri* and *Cupido minimus trinacriae. Anthocharis damone* was compared with *A. cardamines* and other Pierids included *Aporia crataegi, Leptidea sinapis* and *Gonepteryx cleopatra*. Four *Melitaea* species: *cinxia, phoebe, aetherie* and *didyma* were demonstrated, showing the relatively small size of *M. phoebe* in Sicily. The examples of *Zerynthia polyxenor* included the form *ochracea*, having a yellow ground colour instead of the more usual light cream. The Lycaenids shown included *Glaucopsyche alexis, Pseudophilotes baton, Celastrina argiolus* and



Heodes alciphron. Pyronia cecilia and Lasiommata maera were included in the display as were Pyrgus malvae and an early male Carcharodus flocciferus.

#### Matthew Smith (5866)

Two abberant bumble-bee Queens taken in 1998

Queens of two species of bumble-bee were exhibited. The first specimen was a partially melanic queen of *Bombus terrestris*. Queens of the British subspecies of this bee (*B. terrestris audax*) normally have a dingy yellow collar at the front of the thorax, a similarly coloured band on the second abdominal tergite and a tawny or buff coloured tail. In this specimen, taken at Nettlebed in Oxfordshire, the yellow hairs forming these bands were mostly replaced with black hairs tipped with yellow. The buff tail is also much reduced. From most viewpoints, the specimen appears to be a large black bumble-bee with a hint of brown at the tail, the faint yellow bands are only visible from certain angles. Melanism is not infrequent in some species, but this is the first example I have found in *Bombus terrestris*.

The second specimen was a queen of *Bombus hortorum*, found running about on the banks of a pond in Bracknell in Berkshire. The most noticeable thing about this specimen is that it appears wingless. Closer examination shows that the wings do not appear physically to be lost, but rather appear to have either failed to develop properly or failed to inflate when the bee emerged from the pupa. The normal colour scheme of the hairs on the thorax and abdomen is also altered. Instead of having a bright yellow scutellum and yellow band on tergite one, the hairs on the scutellum are white. A band of white hairs runs centrally down the dorsal surface of the abdomen, interrupting the yellow band on tergite one and running into the tail at the hind end. White hairs are also present along the margins of tergites two and three instead of the more usual black hairs. It is likely that this bee suffered some trauma (perhaps temperature shock?) during the pupal stage to produce this abberation.

Specimens of the more usual form of the queen of each species were also exhibited for comparative purposes.





#### Aquatic Entomologists and Scottish Fisheries Law

by Craig Macadam (11277)

35 Prospect Street, Falkirk, Stirlingshire, FK1 4BA. Email: invertebrates@hotmail.com

Legislation to protect migratory game fish such as Salmon and Sea Trout in Scotland has an important impact on the work of the aquatic entomologist. The eggs and young of salmon have been protected since 1857 and to this day, the disturbance of beds, banks or shallows where migratory fish have spawned is an offence.

Obviously, if you were to carry out kick sampling for benthic macroinvertebrates in a river populated with salmon or sea trout then you would run the risk of falling foul of this legislation.

It is not all bad news though. The aquatic entomologist can gain permission from either a District Salmon Fishery Board if one exists for the watercourse, or otherwise from the Secretary of State. This permission is available if the disturbance is for some scientific purpose; to protect, improve or develop stocks of fish; or, for the conservation of any creature or other living thing.

Your application for permission from the District Salmon Fishery Board or the Secretary of State should specify the details of the activity for which permission is sought and also the enactment to which the permission relates.

It is a worthwhile exercise to seek permission, whenever in doubt, giving as much information regarding your proposed activity as possible. An offence against the legislation could result in a fine and/or the forfeiture of vehicles and equipment used. You have been warned!

#### References

Tweed Fisheries Act 1857 Salmon Fisheries Act 1868 Salmon and Freshwater Fisheries Act 1975 Salmon Act 1986

#### DON'T MISS THE EXCITING NEW AES PUBLICATION!

THE AMAZING WORLD OF STICK AND LEAF-INSECTS

by Paul D. Brock

SEE THE AES PUBLICATIONS STAND AT THE ANNUAL EXHIBITION





#### Have you seen it yet? Or: On holiday with the Registrar

by Susan Holford

5 Conifers Close, Horsham, West Sussex RH12 4QH.

Nick and I have frequently visited the Algarve in the spring, but mostly the Western end. When the opportunity came for us to take a holiday just after Easter at the eastern end we jumped at it. This was not a package deal this time, as we stayed in a small villa sited in it's own nature reserve – and we arranged to go with another entomologist and his wife. So really this is E by A  $\times$  2!

Nick and Peter spent many a happy time before the holiday mulling over what they expected (and hoped) to find. Both being coleopterists, beetles came high on the list. Still, there were some considerations given to the fact that Corinne and I were there too (much in need of a holiday – anyone else who has gone through an OFSTED will understand!). We'd hired two cars so that our food shopping didn't cramp their collecting time.

Nick had two main aims for the holiday – to see the Mediterranean Chameleon and the flamingos at the Castro Marim reserve on the Portugal/Spain border. I don't really need to elaborate on the intricacies of packing all the collecting equipment – all EbyA's have been there before! Just guess though whose clothes were deemed to be in abundance. (For the sake of propriety I was allowed to take a few!)

After the usual airport delays and shenanigans with car hire, we finally arrived at gone midnight, and I don't think anything can beat that first sunny morning when you wake and take in the views and atmosphere of a new place. It was just wonderful - bring on the olives and wine! Nick and Peter of course just had to get out in the grounds to "just see what's there" while we dutifully unpacked and got sorted. But then, who wants two men hanging around in that situation. This was a holiday - I was mellow! So I was rather surprised to see Nick plodding back after a short time, looking very dejected. In an attempt to photograph a butterfly (sadly not the chameleon) he'd fallen backwards down a rocky slope and rather unceremoniously landed in a gorse bush! So, the first morning was then spent picking thorns out of a very tender and cut backside! Daily attention then seemed necessary (for better or worse comes to mind.) Nick hasn't yet developed his pictures, so we don't even know if the shot came out which the thorns did!



It was a wonderful holiday – good weather, good food and wine and good company. Corinne and I did note that the beetles we seemed to find happened to be "common" and therefore reduced to the ranks of "girls beetles"! I blotted my copybook by noticing a huge beetle on the landing one day, and not having any collecting tubes on me could only describe it, but it never appeared again. I still suspect they think I made it up! Many an evening was spent on the veranda with the geckoes with Peter and Nick comparing specimens – hence the title.

Here's a familiar scenario to many of you I'm sure. Nick and I had spent the day travelling around and rounded the evening off with a lovely meal in Tavira. Driving back, and reflecting on all the things we'd seen (beetles/sights, or sights/flowers etc, depending on your perspective) when he slammed on the brakes and reversed at breakneck speed a few feet. You've guessed it – a large beetle crossing the road! What I did feel a bit aggrieved about though was the jaunty angle of the car across the road with me still in it whilst he foraged around for the beetle by headlight! I'd spent many a mellow moment high up on the veranda watching the locals tearing round that road!

And the chameleon? Yes, he eventually found it, and we got to see the flamingos too! There are stories attached to that too, best retold after getting in the mood with the olives and wine! Watch out for *Bulletin* covers in the future – and I can assure you that with daily attention Nick's backside healed nicely and the scars are almost gone! And to come clean, I also fell over whilst trying to photograph a butterfly. Perhaps I'd had too many olives!

The list of specimens seen was lengthy, but here's three:

The butterfly:

Portuguese heath fritillary Mellicta athalia biedermanni Qu

The girls beetle: Capnonis tenebrionis

The big beetle Blaps gigas

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#### Stag beetle (Lucanus cervus L.) Survey 1999

by Keith C. Lewis (3680)

Top Flat, 108 Park View Road, Welling, Kent DA16 1SJ. e-mail: GKC@emailpost.freeserve.co.uk

AES members who took part in the 1998 National Stag beetle (*Lucanus cervus* L.) Survey will by now have received details of last year's survey. For those members who are not coleopterists the People's Trust received over 11,000 records, many from North Kent and the Medway towns. If you can help the Trust again during 1999 will you please concentrate on the areas of Central and South Kent for which records are few and in other areas not covered in last year's survey (see Figs. 1 and 2). Also if members are willing to encourage other individuals, local groups or press in their own locality to carry out fieldwork, the Trust would be most grateful. The *Stags in Stumps* information leaflet/survey form can be obtained from Claire Percy at the address below. Please would you also enclose a first class stamp for your reply as the P.T.F.E.S. is a registered charity. Would you also mention my name in your letter to give a feedback. There is no deadline for sending in new records but it is sensible to aim for the end of September 1999.

The following are areas of particular interest for the 1999 survey: Bedfordshire; Cornwall; Devon; East Sussex; Gloucestershire; Isles of Scilly; Somerset; Isle of Wight; Norfolk; Lincolnshire and East Midlands; Cheshire; Shropshire; Wales; Warwickshire; Wiltshire, Worcestershire and Herefordshire; North-west, Cental and East London; Central, East and South Kent; North-west and Central Hampshire; West Berkshire, Central and North Oxon; West and North Dorset; Central and North Bucks; Central and North Hertfordshire; Central Essex and North and West Suffolk.

The two records received during 1998 from the Isles of Scilly were unexpected.

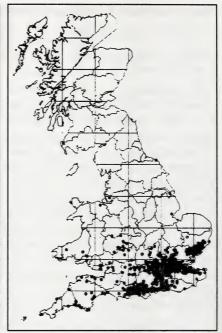
Further information can be obtained from:

Claire Percy
Project Team
People's Trust for Endangered Species
15 Cloisters House
8 Battersea Park Road
London SW8 4BG
Tel: 020 7498 4533 Fax: 020 7498 4459



| Top 12 counties<br>for Stag beetles | No. of records<br>submitted |  |  |  |
|-------------------------------------|-----------------------------|--|--|--|
| Greater London                      | 3,068                       |  |  |  |
| Surrey                              | 1,425                       |  |  |  |
| Hampshire                           | 1,042                       |  |  |  |
| Suffolk                             | 789                         |  |  |  |
| Berkshire                           | 764                         |  |  |  |
| West Sussex                         | 666                         |  |  |  |
| Essex                               | 582                         |  |  |  |
| Dorset                              | 571                         |  |  |  |
| Kent                                | 504                         |  |  |  |
| Oxfordshire                         | 212                         |  |  |  |
| Buckinghamshire                     | 208                         |  |  |  |
| Hertfordshire                       | 106                         |  |  |  |
| No other counties                   |                             |  |  |  |

exceeded 50 records.



**Figure 1.** National distribution of the Stag beetle.

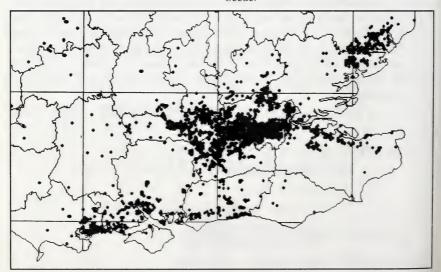


Figure 2. A closer look at the South East.



# The Voice of the Infinite in the Small. Revisioning the Insect-Human Connection

by Joanne Elizabeth Lauck. Swan Raven & Co, Mill Spring, NC, U.S.A. 1998, paperback, 361pp, price: US\$18.95 (or about £13.99 in UK) ISBN 0-926524-49-6.

This book came to my attention following spotting a praying mantis on the front cover of a magazine called *Kindred Spirit*. I did not know what to expect before the book arrived, but the magazine article indicated that the book included some interesting stories about insects.

Whether one is scientifically focused or spiritually minded, why not give this book a try and judge whether the author's work changes the public's view of insects, giving them a better understanding of these creatures, particularly species which afflict humans, such as cockroaches, flies, mosquitoes and crop pests. The environmental educator author says the problems and solutions are within us.

The book has an attractive and appropriate mantis cover, once one reads that the praying mantis was chosen as African Bushmen's highest representation of value and meaning or "the voice of the infinite in the small". This work deals with a wide subject range, including hostility to insects as featured in movies we all know about, the destructive use of pesticides, humans fear of being bitten. Why then should people stop using bug-zappers, killing devices which one entomologist has suggested are used for amusement and should be sold in the homeentertainment section of stores! How do we coexist with insects without chemicals? This volume is divided into four sections i) Redrawing the Circle; ii) Redeeming Pest Species; iii) The Eight-legged People and iv) Rejoicing in Insects. There is significant coverage of flies, cockroaches, mosquitoes, beetles, ants, bees, butterflies and praying mantids – in addition to non-insects (spiders, scorpions). The author has cited numerous works, indicating an impressively wide research; an index is



also included – scientific names are, however, rarely used, but the content is accurate and I particularly liked the numerous stories, which range from myth, anecdote, wisdom and science. Do you dream about insects?

This book will be a major diversion from the entomologists' usual reading matter. Why not buy one/obtain a copy from a library and take it on holiday to read. Unless you are spiritually minded, you may not agree with many of the comments, but you will find it thought provoking, entertaining and there is certain to be something of interest, particularly if you are interested in one of the orders listed. Remember that the author is not an entomologist, but her passion for insects comes across strongly in this well written book and she shares a common view in trying to change the public's image of insects, getting them to live in harmony with these creatures.

Paul D. Brock (4792)

#### Forester Moths

by K.A. Efetov and G.M. Tarmann, published in 1999 by Apollo Books, Stenstrup, Denmark, 192 pages, including 12 colour plates, hbk, ISBN-87-88757-23-4, price around £43.

This book is dedicated to the memory of V.V. Kislovsky who did most of the line drawings in it and who died in 1998 at the age of only 24. It deals with the 63 known species in the subfamily Procridinae of the family Zygaenidae, which are recorded from Europe, north Africa, and western and central parts of Asia, and which are generally known as "Foresters". (Of these 63 species, only three are known from the British Isles). The text is in English. The front cover consists of an excellent enlarged photograph of a male *Adscita mauretanica*.

After the introductory page which refers to 13 new species which have been discovered in the region during the last 40 years, there is a page which defines the subfamily Procridinae, and gives brief reference to the structural and chemical characters of the four genera which are described. The colours, lengths, and numbers, of setae which are found dorsally, subdorsally, and laterally, on the first abdominal segment of first instar larvae of 19 of the "Forester" species studied are regarded as diagnostically important and are shown diagrammatically, and there is a small chart showing the haploid chromosome numbers for a few of the species. After a short chapter which speculates on possible relationships between genera and subgenera there is a Check List giving current names and synonyms, which numbers the species from 1 to 63. The



main text, occupying 39 pages, gives notes mainly under the headings: Type locality, Range, and Host-plants (where known). The Keys to genera, subgenera, and species, are illustrated with five diagrams showing wing-venation, seven showing forelegs, and sixteen showing much-enlarged distal ends of antennae, but the text in the Keys refers mainly to details of the male and female genitalia. Drawings of male genitalia occupy 20 pages, while drawings of female genitalia take up a further 14 pages. The next 10 pages are devoted to life-histories, with brief notes on "Locality", "Biotope", "Egg", "Larva", "Pupa", and "Cocoon", but only six species, Jordanita notata, J. splendens, J. tenuicornis, Adscita albanica, A. subtristis, and A. taftana, receive this treatment. There is a short note dealing with new records of parasitoids and an Acknowledgements chapter. The first five colour plates, showing moths twice life-size in set position, are good, but since so many "Forester" moths, with their virtually unicolourous forewings devoid of clear contrasting markings, can be superficially similar to each other it would be unwise to rely entirely on these plates without reference to the text, for accurate identification. The next few illustrations show colour photographs of a selection of eggs, larvae, cocoons, pupae, and host-plants, and the three final colour plates illustrate a number of scenic views of biotypes.

The book is well produced and almost free from obvious printing or spelling errors (such as "geografical" on page 33). It is clearly the result of a great deal of painstaking investigation, and it will appeal largely to those who have a specialised interest in "Forester" moths, though some readers may be daunted by the absence of a glossary to clarify the meanings of some technical terms. Words such as "apomorphy", "autapomorphy", "symplesiomorphic", and "monophyly" may not be immediately comprehensible to the non-specialist reader.

The early stages of many of the described species are unknown, so there is plenty of scope for further research. The shortage of information on larvae, though clearly unavoidable at the present state of the authors' knowledge, detracts slightly from the usefulness of the book, but it serves to emphasise the many gaps in current knowledge, and perhaps will encourage future investigation into the biology of "Foresters".



#### Habrophlebia fusca from a standing water

by Craig Macadam (11277)

35 Prospect Street, Falkirk, Stirlingshire, FK1 4BA.

Email: invertebrates@botmail.com

In 1981, T. Kirkwood, a student from Edinburgh University undertook a series of benthic invertebrate surveys at four drinking water supply reservoirs near Edinburgh as part of a BSc (Ecological Science) with Honours in Resource Management.

On 1st July 1999, I carried out several ad-hoc surveys at Rosebery Reservoir, Midlothian to verify the existence of a leptophlebid mayfly, *Paraleptophlebia tumida* (now known as *P. werneri*) as recorded by Kirkwood in 1981.

There are seven species of Leptophlebiidae found in the British Isles. Of these seven, only two are reportedly found in standing waters, *Leptophlebia marginata* and *L. vespertina*. The remaining leptophlebids are restricted to running waters only. The existence of *P. werneri* would be notable in itself, being an uncommon mayfly species, however to find a specimen in standing water would be of particular interest.

Although July is rather late in the year to find leptophlebid larvae, in one of the surveys a single leptophlebid larva was recorded and later identified as *Habrophlebia fusca*. This is particularly remarkable in that *H. fusca* is reportedly only found in running waters and would be a third species of Leptophlebidae recorded from Rosebery (the other two being *Leptophlebia vespertina* and *P. werneri*).

Further surveys will be undertaken in Spring 2000 to ascertain what other leptophlebid species are now present at Rosebery Reservoir and whether *H. fusca* is indeed surviving successfully in standing water.

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#### And now for something completely different

by Harry T. Eales

11 Ennerdale Terrace, Low Westwood, County Durham NE17 7PN.

I am an entomologist, a dyed in the wool entomologist, and have been, since I was bitten by the bug (pardon the pun) in my early teens. My life has been, and still is, devoted to a dedicated study of the distribution of certain insects in Northumberland and County Durham. I eat, drink, breath and sleep insects. In rare moments of relaxation, what else would I do, but read some of the very few amusing books on entomology. Many readers will, no doubt, be familiar with the delightful but small collection of books by P.B.M. Allan. As far as I am aware he is the only person to have published books on entomology which were entertaining. I am in full agreement with him regarding his statement, "that most books on the subject are dull and that an idle story on moth gossip is at times a welcome change". As no one seems to have taken up his pen, I offer the following true story.

#### POLYPORUS IS WHERE YOU FIND IT

or

#### THE SLIME MONSTER OF PARK WOOD

In late September or early October each year, I have a day out collecting polyporus. Kite net, beating tray, sweep net *etc*, are all left at home, for when seeking the wild polypori, they are not needed. The only requisite being a carrier bag. I should explain at this point, for those unfamiliar with this substance, that polyporus is a rather useful fungus that grows at times, in profusion, in many birch woods. It is very easy to identify, being a large bracket fungus, brown on top and white underneath and which has been used for many years by numerous entomologists for staging delicate insects, in private and museum collections. It is to be found growing on old, dead or dying birch trees. I know there are modern man made substitutes for polyporus, but I am a traditionalist, and like the real thing.

My tale starts on a warm sunny afternoon in late September when I judged that the time was appropriate, and the weather was pleasant enough, to kill two birds with one stone. I would walk my dog and collect my annual supply of polyporus.

Park Wood is a pleasant area of ancient woodland, composed of a mixture of oak, birch and hazel trees, situated in the Derwent Valley in



south Northumberland. Through this woodland runs a small stream, and has in one place, an adjacent swamp. This woodland is a popular place for walkers and unfortunately, for the rather obnoxious type of child who likes playing in woods, type who break off branches, light fires and trample the bluebells, *etc*, but I digress; so on with the tale.

The first path I walked, I found a few medium-sized polyporus brackets which I did not remove. However, as I walked the lower path on my return journey my eye was drawn to several dead birch trees in the middle of the quaking swamp. Upon these birches grew enormous, meat-plate sized, mouth watering specimens, of the object of my desire, and they were present in such great abundance, as to boggle the mind. Carefully testing the ground ahead of me, I slowly made my way over the surface of the swamp. Within a few minutes an ample supply was secured and my carrier bag was as full as was needed. Now for the return journey home in triumph. But there was one thing, just one thing, I had overlooked. Fresh polyporus contains a great deal of moisture, and my all-up-weight on leaving the swamp would be some pounds heavier, than when I went in. Although temporarily oblivious to this fact, I was still cautious, and tested each step I took. However, I eventually reached an area where the surface appeared quite safe when tested, but, upon stepping forward, it gave way, and I started to sink rather rapidly.

Quick reactions made me throw the bags and their contents to the safety of the stream bank, whilst I twisted my body so as to land in a way that avoided my breaking a leg. The next second I was horizontal in the swamp. To make matters worse, in order to free my leg and attached Wellington boot, I had to turn over to lever the leg and boot out. This resulted, in my being totally covered from head to foot, in the most evil smelling, glutinous ooze. In addition, I was now wrapped with a very thick camouflage of long dead and decomposing vegetable matter. Unable to stand, I had to crawl the remaining few yards to the bank, on hands and knees. My dog, not recognising me, and possibly thinking I was the local postman in disguise, went into her "savage dog" barking mode.

Just then, along the path came jogger, resplendent in designer track suit, designer trainers, and designer forehead sweat-band. You know the sort I mean. The poseur, who goes out for a walk and then runs the last fifty yards to the pub to work up a bead or two of perspiration. He looked first at the dog, and then for the object that the dog was barking at, *i.e.* me. By then I had gained the bank and being unable to get a firm foothold, was vainly attempting to crawl up the steep slope. But,



being still covered in slime and rotting vegetation, I lost my grip and started to slide back into the swamp.

Just what this man thought he saw, I can only surmise. Perhaps the site he witnessed stirred memories of some horror film, but, whatever he thought, he came to an instant decision, and went off along the track at such speed, I am certain that the soles of his trainers came close to melting.

I will not bore you with the details of how I got home, nor the tale of the man from the Council, who came the following day, to enquire, if I had smelt the foul odour my neighbours had all complained about. Or yet, the even stranger stories, the old men in "the snug" of the local hostelry tell, about the evil thing that lurks in Park Wood swamp. Suffice to say, that on my later sojourns to these woods I was completely alone, not a single walker or obnoxious child was to be seen.

I shall now look forward to several weeks of curing, preparing and slicing my polyporus, and will no doubt, have the odd laugh at my own misfortune. But after all is said and done, polyporus is where you find it.



The Amateur Entomologists' Society

# 1999 EXHIBITION AND TRADE FAIR

Kempton Park Racecourse Staines Road, Sunbury, Middlesex

Saturday 2nd October 1999

Doors open 11.00am



#### Flogging a dead dodo

by Leigh Plester (2968)

BioFilm Oy, Ylä-Muuratjärvi, FIN-41800 Korpilahti, Finland.

Continued from page 122

A nice hot day greeted us on 8th December but the weather was not to last. We were at the Ministry of Agriculture, speaking to Mr Mungroo before nine o'clock. The national park officer he sent with us up to Le Pétrin, headquarters of Black River Gorge National Park, confirmed my impression that France Staub's was the best book, if not the only one, for an introduction to the Mauritian fauna. On the way we passed a tea plantation, the bushes short and flat-topped, like brow-beaten box trees in the grounds of an English stately home. With permission, I was able to photograph a colourful tea picker, a middle aged lady. May I now make another point: I never photograph or film people obviously at work, without first asking their permission. Few refuse to grant it, the notable exceptions being some Muslims, who understandably do so on religious grounds. Neither would I dream of entering somebody's home, however humble, without being invited inside.

Arriving at the Le Pétrin office of the Black River Gorge National Park (Fig. 1) on a scrubby plateau that felt distinctly cool after the hot coastal area of Flic en Flac, and with the sky as thundery-looking as a Marxist who's wandered by accident into his local Rotary Club, we found that the 4x4 pick-up we had been promised was still out and about. A uniformed bald coot with a brown pate known as Paul, who successfully combined biology with humour, and whose English explanations consisted of several hundred words all liberally rolled into one, saved the situation by taking us down the rather short board walk that has been set up for the visitors to the centre. Imagine it as a levelled-out stairway passing through dry-looking shrubs set in rather wet-looking soil complete with brook. The New Year flower (Ochna mauritiana) was in bloom; this is a white-flowering bush whose blossoms appear at - you've guessed it. What you probably didn't guess is that it is completely starkers after September, when it shucks off its leaves.

To get at the nectar, a sneaky bird had bored through the scarlet petals of the only specimen of the Mauritius national flower Paul could find without leaping out into the scrub in his splendidly pressed fawn uniform like a latter-day Peter Pan. The flower is the kind Staub figures on his cover as the olive white eye bird pauses before drinking his fill.





**Figure 1.** Black River Gorges National Park, home to a wide variety of insects, including the small satyrid *Henotesia narcissus* and the Brown playboy (*Deudorix antalus*).

Rather unusually, the park authorities are actively encouraging the public to pick the fruit off all the guava trees they can find in the reserve, for the guava, hailing originally from China, has become a pest, gradually forcing out the indigenous shrubs and trees of Mauritius. As all the flowers on a guava tree, even a young one, produce fruit, reproduction is prolific. "We've tried to get the public to eat the giant African snails as well", confided Paul, with a twinkle in his eye, "but people are disgusted at the idea!" Tacky problem that.

I trust that nobody takes seriously my assertion that the tropics are quirky, for what, after all, is in a name? A European Common blue may be *Polyommatus icarus* and a Mauritian Common blue *Leptotes pirithous* but, disregarding history, which English name could one aver is correct? Even so, one may be taken aback to be told that "this is a carrot" (announced Paul, drawing up at a scrubby bush). Kalúla picked a leaf and so did I. I could almost hear our Sheik's mind whirring: Porkkana (Finnish for carrot)?!? "Isn't it?" asked Paul. "Isn't it what?" asked bird-brained Plester. "Carrot!" Naturally it smelt and tasted more carroty than *Daucus carota* in Europe. Live and learn, say I, while still preferring my carrots to be orange and juicy.



A roar and several thumps of doors heralded the arrival of a 4x4 pick-up that obviously belonged to none of its disgorging occupants. Something spat on me, proving to be the brooding sky. There is a babble of conversation and, as the leader of the expedition to film the extinct dodo egg-laying (and to tape a few dead languages, if at all possible), I had my hand shaken to death. I don't know what it is, but people involved in conservation and environmental research anywhere in the tropics always seem to have a great sense of humour, yet they are the most dedicated people one could hope to find on a planet battered by human greed. They laughed and joked until we began to believe that the circus was back in town. Then some species in extremis must have given a signal, for abruptly it was all action. We didn't pile on to the double row of seats in the pick-up cab, we crowbarred ourselves into position, the large Betacam video camera cushioned on my lap, as I knew from previous experience that pickups, like my 1980 Land Rover, were not invented for princesses complaining about a pea under innumerable feather mattresses.



**Figure 2.** Wasteland is common in Mauritius. Morning glory and bamboo (figured) are typical species, together with false acacia, lantana, and a variety of other shrubs, depending on the situation (cool, moist upland or hot, dry coastal area). A good place to hunt for insects and African snails.



Not to disappoint me, our pick-up bucked and skidded its way down a dirt track alongside a low forest the Mauritian authorities had made a lot of effort to save by the simple, if laborious, process of tearing out every exotic tree, sapling, seedling and even seed. It had been a mammoth task that, on a small island like this, deserved recognition. Regrettably, nobody is willing to pay simply for Mauritius' reputation as the original home of the extinct dodo, despite having incorporated in their languages, possibly forever, phrases like "as dead as a dodo". Tourism brings some hard-earned bucks, as the Americans say, but nowadays the republic has to wait its turn for conservation fund handouts. Chief among its benefactors in the past was the late Gerald Durrel, who set up the Jersey Wildlife Trust, and who expressed a deep interest in saving the Mauritius kestrel, pink pigeon and echo parakeet. For many Europeans, television programmes about these efforts remain their only source of knowledge of modern-day Mauritius.

As the truck ground to a halt overlooking a spectacular gorge, rain spattered down. Belligerent tropical rain, not the dainty European variety. Worriedly we piled out, Government employees jumped off the bed of the truck announcing that it was no use trying to film anyway, as the gorge would be hidden soon in mist. "Get the tripod", I ordered, as Kalúla, who went up a notch in my estimation, unfurled a (somebody's) large black umbrella and held it over the camera I was clutching. "This may be the last chance to film the gorge in the rain", I explained to our aides, as indeed it was. But before I had finished a couple of slow pans, the gorge had disappeared in mist. It simply ceased to exist. I grinned at the assembled crowd of by now rainwashed professional conservationists. "Sorry, I forgot my butterfly net, gentlemen" I commented airily, which may have been the reason that the driver, dripping wet, drove much faster down the next stretch so that the heavy camera threatened to hit the cab roof.

We skidded into a compound with a single wooden building in it, from off the veranda of which a new person emerged. He looked happy, as well he should, because, having drenched everything to its satisfaction, the tropical shower had abated and the sun was periodically peeping through a chain of large clouds. The happylooking man was some kind of pigeon warden. "It's alright, Kalúla", I told Petri, as he gazed up at the sky, "we're in the tropics. Sometimes the sun shines here!" He thumped my arm in that annoying weightlifting habit of his. Adjusting a few broken bones, I set up the camera on its tripod in front of a bevy of large cages and watched, spell bound,



as pink pigeons flew around before my very eyes. Now I am going to quote from another book I purchased, Claude Michel's slim *Birds of Mauritius*, published in Mauritius and costing Rp 165. The introduction to this book is so honest that even it, alone, merits buying the book. More to the point, its cover is adorned with a fine photo of the pink pigeon (*Columba mayeri*), taken by Nick Garbutt. The bird has a grey breast washed with pink, dark wings and back, red feet, beak and ring around the eye, and a dark brown and rufous tail. Obviously the early Dutch settlers were attuned to Plester's motto that "the only good bird is one being grilled on a spit", if I may slightly paraphrase my normal comment about electric ovens and succulent avians, for the pink pigeon's population was reduced by 1986 to around 20. A captive breeding programme had already been launched in 1976, one of the unexpected results of which was that in the famous Pamplemousses Botanical Garden people were able once again, albeit on the sly, to savour pigeon pie, with disastrous consequences for the filling!

Several of the newly bred pink pigeons circled around us in the Black Gorges National Park with the usual pigeony clatter of wings and suddenly there was one sitting in front of the camera on a convenient wire, its head bobbing backwards and forwards in that characteristic manner known to all who have ever thrown down breadcrumbs in their local park. Then two things obligingly happened; the sun came out from behind a lethargic large cloud and another pigeon flapped down and immediately began to take a sand bath, its yellow eye with the red surround gleaming brightly in the increasing illumination. It was so close that I had to surreptitiously back off in order for my telephoto lens to focus! I had "bagged" a third specimen which, as if by order, was perched in a tree pecking at buds and leaves, before a sharp exclamation from our guide startled us into following the direction of his pointing arm. Thrilled at having just filmed one of the world's rarest birds (albeit where thousands had trodden before me), I was unprepared for the sight of a small green parrot perched in a dead branch right at the top of a tree. It was an echo parakeet (Psittacula eques), another of the world's threatened species on the brink of extinction. As recently ago as 1991 there were only 15 of these birds left in existence; by December 1997 there were 26, testimony to some sound conservation efforts on the part of the Mauritian government, assisted by donations and voluntary manpower from abroad.

Our last port of call was a dim forest from which all the so-called evasive exotics had been painstakingly removed. It was dim, not



because the trees were tall, but because the rain had come on again, and there were dank, dead leaves underfoot, accompanied by grubbed out saplings laid out in long lines to provide future compost for the growing indigenous forest stand. An orange bracket fungus or two sprouted perkily from some of the dead stems and branches. Among the standing native species were ebony trees, looking as impersonal as your average tropical tree from the outside. A lot of rainforest trees are like western pop songs, difficult to segregate. Whole ebony forests attracted the attentions of the Portuguese in the 1600s, who saw a ready market for them in Europe. Soon another of Mauritius' natural resources had all but disappeared. The republic's oldest remaining, strictly protected, specimens are almost two centuries old. One wonders who is going to wait so long before chopping down the present generation of saplings, but at least replanting is a start. A few of the evasive exotics were already belligerently resprouting, but they would soon be weeded out, averred Paul. So soon after management the stand seemed in very good condition and everyone had high hopes that the project would succeed.

Paul's mobile phone inconsequently played us a merry tune and, as he withdrew to the quieter vicinity of the pick-up, the rain began to fall on us with steady precision. Then without warning a dead leaf detached itself from a tree trunk and there, bobbing and jerking over the forest floor in that erratic flight alluded to by every author I have ever read on the subject, was an Evening brown (Melanitis leda). This is the insect I described as looking like a dollop of sheep dung in the Welsh hills after one accidentally flew into our hotel in Sri Lanka (1991). There are several subspecies in the broad range of the butterfly, extending from Africa and the Muscarenes (Mauritius, Reunion and Rodrigues) to many parts of the Old World, including Taiwan and Australia. With four different reference books open on the table in front of me, it is interesting to compare plates of the species (while remembering that one picture means only one individual out of a probably variable population). Melanitis leda bankia from Australia (see ref.) has bright orange patches and eye spots with double white pupils on its forewings; the M. leda leda from West Malaysia is far dimmer in coloration and has a decayed leaf underside virtually devoid of spots; the M. leda (no subspecies given) from Sri Lanka has a pepper and salt look to its underside, with some prominent pupilled eyespots, while the upperside bears hardly any orange markings. The Mauritian specimen figured has the most "staring" wings of all, with huge forewing evespot almost completely covering the orange patches, and



some prominent minor spots on the hindwing. Its underside has the same pepper and salt appearance as that of the Sri Lanka specimen and there are similar gleaming eyespots on all wings.

Nobody in their right mind is going to start naming subspecies on the basis of four illustrations in four different books! Moreover, Williams on Mauritius mentions that there is wide seasonal variation in coloration in the wing patterns "particularly in regard to the 'eyespots' on the wings". Besides, ecology is more important than morphology these days, so that it is much "greener" to discover that in West Malaysia the caterpillar of the evening brown feeds largely on the leaves of rice (or "padi" as it is called over there). Since the butterfly is also common in the neighbourhood of bamboo hedges, Eliot concludes that it must lay on bamboo (*Bambusa* spp.), too.

In Mauritius the larval foodplants are given as various grasses, including the sugar cane (Saccharum officinarum) and – well, well! – bamboo fataque (Thysanolaena maxima). Williams records the green caterpillar with its protuberant horns as being a "very minor pest" of sugar cane. I have mentioned that the Mauritians are going in for cultivating sugar cane in an ever bigger way than before but one wonders whether a satyrid that prefers flitting about, much like a puppet on a string, in gloomy forests in the evening twilight, could ever be at home in several hectares of sugar cane exposed to the blazing sun at an air temperature of well over 30°C. It seems hardly likely to begin decimating the sugar cane that at one time the Creoles were imported (usually against their will) to harvest. Bamboo species are forest plants (ask the giant panda).

Dr Palnivel Chellapermal was the doctor, married to a Pole, who had originally contacted me from further north in Finland and had set the wheels of our filming trip to Mauritius in motion. He had a son and three daughters, two of whom had graduated from British universities. Born in Mauritius, Anetta was the second "egg in the clutch" and had gone on to read Media Studies at the University of Kent, from which she had recently graduated. It was a typical "you scratch my back, I'll scratch yours" situation, as the Americans say in their inevitably direct fashion, for Anetta, despite working for a video production house in Basingstoke, lacked field experience and The Doc, as we had dubbed him, had thought this would be a splendid opportunity for her to gain some first rate experience in what was virtually the pimple – I mean, land – of her origins. At home in Mauritius, "Papa Doc" or Henri Chellapermal, the Doc's father, and his charming wife, who dressed in a



sari, were the kind of folk one tries to avoid after a hard days work as, once they had got you behind their iron gates, you were obliged to stay there until, bloated and belching from one of Henri's sumptuous curry meals and still feeling you could have fended off the last cold beer in the interests of road safety had you been blessed with a less meek personality, you staggered off into the gloom hoping stoic Joe could still drive, which he inevitably could.

A very old friend of the Chellapermal's, Joe used to arrive at our three-storey "bungalow" early the morning after, announcing "After I 'ave got back last night, with Henri we 'ave killed a whisky bottle." Anetta had still not arrived when Joe dropped us off at our base camp on the evening of the 8th. But when he returned next day to pick us up for the first of our minor island (Isle aux Aigrettes) trips, a slim, longdark-haired young lady with pale skin stepped out of the passenger seat. "It looks like Anetta has come," remarked Kalúla, taking up most of the doorway and demonstrating powers of observation unimpaired by the heat of the tropics. "Hello," said Anetta, extending a slim hand. Neatly clad in freshly pressed white shorts and blue shirt, his spectacles glistening and his grey hair, tied in the neat pony tail, freshly shampooed (he said so), Joe sat down on one of our uncomfortable African hardwood chairs. "See, I 'ave brought you a woman," he announced in general. "Now what are we going to do with these two, eh?" "Marry them off?" I suggested. Anetta found something of interest on our dining room table (probably a dead termite I had overlooked from a swarm visiting us the previous evening), and Kalúla's glance straved to the ceiling.

On the way down to Isle aux Aigrettes, off the south-eastern tip of Mauritius, warm air streaming in across my brown arm protruding over the car window ledge, Joe engaging only in desultory conversation with me, and Petri and Anetta getting to know each other in Finnish on the back seat, I had a few minutes every so often to review my knowledge and experience of the island so far. AES bods must be aware by now that there are not many butterfly species and I was once again handicapped by not being able, for example, to take an m.v. moth trap out into one of remaining sections of woodland at night, nor to ferret among people's gardens for so-called pests. Learned in Borneo in 1988, my habit of "lamping" round the street lights at public expense yielded poor results in Flic en Flac. Could the reason for the general lack of insects, and especially of large, spectacular ones, be the general rape of the environment that has been taking place over the last few centuries? How would Mauritius have looked at the time when the dodo (*Raphus* 



cucullatus) waddled along its beaches and scratched among its scrub? Victims of obesity and flightlessness at the mercy of hungry sailors, the dodos died out – that is, they were wiped out – by 1674. Reports have it that the grounded bird, related to the pigeons incidentally, was not particularly tasty, but after months at sea I suppose a sailor will eat anything, even a greasy dodoburger. The entire history of Mauritius, from the dodo's demise onwards, is one of chance landings by man, followed by immigration, commercial business, oceanic trade, exploitation, and extinction for local species which, on their tiny volcanic outcrop in the Indian Ocean, have had nowhere else to go. I came to regard the location as a miniature version of our planet, for obvious reasons.

Our arrival at the Croix du Sud hotel, on the outskirts of Mahebourg, shattered my reverie. A boat set out from the jetty towards Isle aux Aigrettes, some 900m distant, and picked us up, the sea bright blue, the last mountain chain on the mainland precipitous, scrub-covered, grassy topped, the various shades of green and brown changing as the shadows of clouds stole furtively across them. To the sound of banging hammers from a new visitor centre that, at Japanese expense, is being constructed of Malaysian meranti wood - a good end for a highly exploited Bornean tree species, if I may say so - we shook hands with the island reserve's warden, Ashok Kumar Khadun, who showed us some of the 25 hectare reserve under a gruelling sun. Coral underfoot must be one of the worst kinds of rock from the point of view of thermal reflection. Hearing one of us remark on the heat, equivalent to the "simmer" setting on one's electric cooker, Ashok cheerfully informed us that the actual air temperature was around fifty degrees Celsius, a pronouncement which did wonders for our morale. As expected, Kalúla and Anetta aristocratically stood under the shade of a tree while I perspired over the camera, or attempted to keep our guide in the picture as he explained what made this particular nature reserve so special.

Many of the plants here exhibit heterophylly, meaning that their leaves start off with a different colour and shape. Young leaves may be long, thin and mottled, with prominent red midribs, like that of the tree the Mauritians have dubbed bois de rat (*Tarenna borbonica*). Later these become broader and greener, losing their red coloration altogether. Why does the change in colour occur as a sapling reaches a metre or so in height? Ah, interesting! Biologists now believe that this helps the seedlings avoid the attention of tortoises, who are put off by the message that the younger leaves are deadly poisonous. As a confirmed



sneak myself, I appreciate the subtlety. Incidentally, a few Elephantine, or Aldabran, tortoises (*Dipsochelys elephantina*) now live in a sunken pen at the reserve, where they approach at breakneck speed (+/- 0.5km per hour) when new visitors peer down at them. The species was brought to Mauritius in 1883.

Among other things, a shrew, known in the poetically licensed vernacular as Le Rat Musquet, has been almost eliminated from the island. Needless to say, this eater of the eggs of endemic lizards, skinks, geckoes and boas was, er, introduced around 300 years ago. A score or so of the endangered Mauritius kestrel have been put down on the island on which, being birds, they have untrustingly flown up into the trees. One stalwart now lives in a nest box right in front of the warden's house and he obligingly swept down to snatch a dead white mouse from a conservation volunteer's hand, so that I was able to get some good video shots of another of the teetering birds of this world. At the rare plant nursery they have set up for the purpose of breeding indigenous tree seedlings I took a long draught from the water tap, having at first ascertained that the liquid was potable, as the French say. This sparked off a heated discussion, subsequent to the liquid settling in my tum, on whether the fact that the water tank had been emptied down to its bottom ooze the previous day meant that my gut was now an aquarium for microscopic invertebrates with a grudge against humanity. A volunteer later mentioned to Sheik Kalúla that he developed acute diarrhoea soon after his arrival on the island. Kalúla and Anetta were convinced it was the water, but let me now warn all AES members about to embark for the tropics. The worst thing you can do is to down a freezing cold drink on an empty stomach. I have twice done this, in different lands, with disastrous consequences; two days of upset stomach is the minimum punishment for such a thoughtless act. As our hosts kindly handed out freezing cold water bottles to help offset our encroaching heatstroke, I suspect that the volunteer's problem was not gulping down tepid tap water, but drinking water at near zero temperature when his body heat had escalated sharply. Be warned. I'm serious.

Discovering that I had a passion for plants, the Rare Plant Nursery's delightful assistant botanist, a bright Hindu lady of approximately half my age (making her just short of 11), offered to show me not a passion flower but an orchid flowering regularly at this time of year. *Oeoniella aphrodite* produces a spray of yellow flowers nodding, as we knelt conspiratorially in the undergrowth, to the slight breeze and emitting a lovely fragrance of an intensity that reminded me of the South East



Asian frangipane so beloved of those taking care of Buddhist temples in Sri Lanka. "Do you want to see a really rare plant?" asked the lady (to my chagrin I forget her name), recognising a fellow biologist. I shouldered my camera and nodded. We arrived at what I can only describe as "a tree" which was cordoned off. "I've managed to obtain a seedling from 33 seeds I planted," the lady confided. Personally I felt she could have spent her time more profitably, but then she floored me by replying, in answer to the inevitable question, that there were only two specimens of the species left in existence. She could see from my expression that I was stunned and she gave me a biologist's smile. Scattered on the ground, the tree's seeds resembled oak galls with wine red globes. Once again, I raised my bush hat to the new generation on Mauritius.

I appreciate that it's becoming monotonous - the one flut one location theme, I mean. However, that is the way it turned out in Mauritius. In Borneo, I assure you .... (staunch the flow, somebody, for heaven's sake.) On Isle aux Aigrettes we were passing several bleached African snail shells (a pest) and had just heard the rustlings of a shrew (another pest), when we came upon a butterfly (a nonpest) sunning itself. Yep, definitely a fritillary, with its fulvous brown wings, black dots, fritillary shape and size (wingspan around 24mm), except that (ho,ho!) if you discovered a fritillary on Isle aux Aigrettes, Prince Phillip would probably award you a creation prize for inventing a new species rather than just for saving an old one. Never give up, though, old son/daughter. Take a look at another book, one on South-East Asian butterflies, for instance, and you are bound to find that closely related to the Phalanta phalantha that is now in close-up there is indeed a fritillary, Argyreus hyperbius! Phalanta phalantha - it's the Common leopard I referred to earlier - is found in Mauritius, Reunion, Madagascar, Africa and Asia. Williams says that it is one of the most common Mauritian butterfly species, inhabiting gardens and wasteland. When I mentioned fritillaries you possibly thought of violets, so that it may be of interest to hear that the common leopard feeds not on these, but on poplar (Populus deltoides).

Pulling at the totally imaginary fat at her sides with an expression of distaste, and complaining about the amount of food the Doc's father (Henri or "Papa Doc") had shovelled into her, at our Flic en Flac abode Anetta moved into an upstairs room. It made a one-fan difference to Sheik Kalúla and me, reducing us to a single stir of the sauna bath air which inevitably built up in the house when we were away. Why not



sleep under an open window, you nincompoop? Because mosquitoes of the tropical variety are silent and bloodthirsty. Try it for a week and then mail me a report. We spent part of one day in the capital, Port-Louis, one of the most congested and hideous places bushmilling old Plester has ever had the misfortune to visit, Joe complaining there was nowhere to park and then treating us in his basement flat down in Quatre Bornes to a meal of microwave chicken, Anetta-fattening potatoes and rum laced with real orange juice. The juice gave me a hangover. Anetta stayed the night with her grandparents, who live just up the road from Joe, thereby missing the excitement of the early morning of the 12th.

Cooking Flic en Flac breakfast eggs for the Sheik and instant coffee for me, I looked up with interest as Kalúla's muscular frame once again filled the doorway, causing an eclipse of the daylight. "There's an animal in the swimming pool," he said, without preamble, in Finnish. His daily alcohol intake was down to half a glass, so I couldn't accuse him of being hungover and I'd heard no rumours of hippo squatters in the vicinity. On the way out, I cast a suspicious eye at the rear porch roof but no cheeky gecko had put him up to it. Nevertheless, the pool was as empty as a tramp's tum when I stopped and beheld it. Then bit by bit a small whiskery face preceded by paddling hands came into view, doggedly intent on going down a straight. "Steep me buttocks in bird lime, Kalúla," I muttered in English, "You've got us a beauty."

The "beauty" was soon identified as a Tenrec (*Tenrec ecaudatus*), a cat-sized animal that is guaranteed to produce an instantaneous maternal reaction in any woman over the age of thirteen, something we were thankfully spared. I grabbed the camera off the spare bed and, mindful of the fact that the creature was almost exhausted, having obviously spent several hours swimming round the pool like a potential entry in the Guinness Book of Records, I filmed it. Hurriedly set up, the tripod did the splits as I rested it on the tiled surface surrounding the swimming pool. "Bless me," I said several times. Already holding the long net used by the day watchman to clean the pool of dead birds, beer cans and so on, Kalúla awaited my instructions. The man was inspired! Gently scooping the poor exhausted creature on to the tiles, our Sheik allowed me to film the entire sequence at the right speed. He went up several notches in my estimation. Landed, the whiffly-nosed beast shook himself, padded around a small area in a bemused fashion and then staggered off on to the Bermuda grass, thence across the tarmac on to the narrow area of encased soil beneath our front wall



bougainvillaea. Here he proceeded to scoop out a hollow, in which he fell into an exhausted sleep, an ideal hero for a short film for the under five-year-olds.

If I miss out our adventures with shooting Anetta's religious programme, including Charismatic Christian services on two days, it is because they have little place in the *Bulletin* owing to the lack of entomological connotations possessed, in some respect, by other wildlife. Naturally, I could also mention that on 12 December Joe almost had a heart attack owing to the fact that his brethren had set up a concrete wall and some railings at the best spot overlooking the Black Gorges a few hundred metres below us, with the horizontal bar of the railings calculated to block the lens on my camera. I hopped over the wall on to an overhang of rock and did several pans, while Joe's heart did somersaults. There again, there are the days we spent . . .

# Anoplophora glabripennis Cerambycidae in the British Isles

by Keith C. Lewis (3680)

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During the last quarter of 1998, David Sapsted of New York published a report from the United States Department of Agriculture concerning the loss of hardwood trees in Chicago. The death of the trees was due to the importation of goods in packing cases and pallets from China that contained larvae or beetles of the longhorn beetle, Anoplophora glabripennis. An earlier infestation in the state of New York is said to have killed about 2000 trees. Trees at risk are said to include: apple, pear, plum, poplar, willow, elm, sycamore, maple and oak. Apparently the beetle has no natural predators and is immune to pesticides; the only way to eradicate an infestation is to fell the infected tree and either burn or pulp the timber. A further report appeared in January 1999 by David Rennie of Beijing that the beetle has been found in England and Wales (probably in or around our ports); also in the wood of Chinese crates and packing. A British Forestry Commission report states that the beetle could survive our winters and establish itself over a large part of Britain, although the adult does not fly far and is apparently short-lived. Trees affected, apart from the tell-tale boreholes, drop their branches and soon die. At the time of writing this note I have been unable to find a good photograph or illustration of this beetle, the one in the newspapers being poor. The beetle is about one inch long, blackish in colour and the elytras are marked with white spots.

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of the Amateur Entomologists' Society

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The cover of the *Bulletin* features a *Crepidvolera transversa*.

Photo: Nick Holford.

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October 1999

#### The moths of Mepal – additions for 1996 and 1997

by Rob Partridge (8956)

11 New Road, Mepal, Ely, Cambridgeshire.

This is the fifth article in a series that I have written about the larger moths recorded in and around my home village of Mepal in Cambridgeshire (VC29). Earlier articles appeared in *Bull. Amat. Ent. Soc.* **51**: 293-297; **52**: 267-272; **53**: 245-247 and **55**: 265-268.

During 1996 and 1997, a further 20 species were added to this local list, giving a total of 285 since recording began in 1990. Family circumstances meant that little work was done in 1998 but by all accounts it was a year in which I probably did not miss very much!

#### GEOMETRIDAE

Treble brown-spot (*Idaea trigeminala*). One came to m.v. in the garden on 8.7.96. The moth is probably present on most suitable Fenland sites around Cambridge.

Spruce carpet (*Thera britannica*). The first specimen came to actinic light on 12.9.97 – others followed. Several more have been seen in 1998, coming to m.v. This moth is uncommon in Cambridgeshire, according to Ray Revell, the county recorder. There are no stands of suitable trees within several miles of my garden but there are, of course, isolated conifers of various types in the village.

Small waved umber (*Horisme vitalbata*). Two came to light, one to actinic and one to m.v., on 15.8 and 18.8.96. The foodplant, traveller's joy (*Clematis vitalbata*) does not grow in this area as far as I know, though it is common in the south of the county. I would be interested to know whether the moth has been found to use any of the many *Clematis* varieties grown in gardens.

Peacock moth (*Semiothisa notata*). One of the best species recorded in this period. On 9.8.97 one came to m.v. light in the garden, one of the second brood that occurs in southern England. There is only one other county record in recent years. Birch trees have colonised some nearby gravel pits and they are also present in amenity plantings alongside the by-pass.



#### SPHINGIDAE

Bedstraw hawk-moth (*Hyles gallii*). One in good condition came to m.v. on 5.7.97. Ray Revell took another in Cambridge on 10.7.97.

#### NOTODONTIDAE

Lesser swallow prominent (*Pheosia gnoma*). Another birch-feeding species for which there are few records in the cultivated fenlands. It may increase as the young birch trees mature. Not uncommon around Cambridge. One came to m.v. on 18.7.97.

#### ARCTHDAE

Four-dotted footman (*Cybosia mesomella*). In 1996 I made a couple of trips outside my own parish to record for the Haddenham Conservation Society. They wanted records of moths from an area of droves, drains and old pasture that they felt deserved some level of protection, representing as it does what was once a common habitat mosaic in the fens before intensive arable farming. A good range of species was found, including this one which arrived to m.v. around midnight on 6.7.96. There are plenty of records for Wicken and Chippenham fens but few away from those sites.

Scarce footman (*Eilema complana*). In Cambridge this moth is almost as common as the "Common" (*E. lurideola*) (R. Revell. *pers. comm.*) but this is the only one noted at Mepal despite systematic checking. 15.8.96 to actinic light.

#### NOCTUIDAE

Great brocade (*Eurois occulta*). An m.v. trap had been operated at the RSPB reserve at Welches Dam for some years. It takes me twenty minutes to drive there although it is barely four miles from my house as the moth flies. In September 1996, Mark Ward, one of the voluntary wardens, brought a large worn moth for identification and it turned out to be this species. It is a well-known migrant and may have originated in northern Europe. It came to light on 3.9.96.

Hedge rustic (*Tholera cespitis*). A pair in excellent condition came to m.v. on the night of 17.8.96 – sadly, no more were to follow. It appears to be one of those species whose numbers fluctuate widely over a period of years. R. Revel reports that it used to be reasonably frequent around Cambridge but that he has not seen it there for some years.

Pine beauty (*Panolis flammea*). One on 17.3.97 to m.v. We have no pines apart from the aforementioned conifers doing sentry duty in the gardens. Presumably this species wanders as it has managed to distribute itself across much of the country, even where there are relatively few pines.

Twin-spotted quaker (*Orthosia munda*). This species was suspected in 1995 and confirmed in 1996 when one came to m.v. on 18.4. The value of keeping specimens of uncertain identity is illustrated in a small way here; one taken on 6.4.95 was of ab. *immaculata*, without the two distinctive spots on each



forewing. I wondered if it was a form of the Clouded drab (*O. incerta*) but was never happy with that. Once seen side by side with the 1996 specimen, I had no doubt of its true character.

Dusk-lemon sallow (*Xanthia gilvago*). Three came to m.v. between 25.9.97 and 5.10.97. Wych elm (*Ulmus glabra*) is scarce in this area and, if it is established here, the moth is more likely to be feeding on English elm (*U. procera*). It appears "very occasionally" in the Cambridge area according to R. Revell.

Pale-lemon sallow (*X. ocellaris*). One appeared on 5.10.98 to m.v. According to the distribution maps that I have seen, this is a local species in Cambridgeshire. R. Revell records it less frequently than the previous species in the Cambridge area. The favoured foodplant is black poplar (*Populus nigra*) and there is a solitary specimen of this scarce tree in the parish. I don't know to what extent other species of poplar are used.

Old lady (*Mormo maura*). This is a species that rarely comes to light and this one was no exception – it came to sugared foliage on the apple tree in the garden on 28.8.96. It is a large and impressive moth that may be under-recorded because of our reliance on light-traps.

Small wainscot (*Photedes pygmina*). This was another of the species recorded during the surveying done for the Haddenham Conservation Society near the village of Aldreth, Cambridgeshire. A single moth came to m.v. on 6.6.96. Most recent works consider it to be fairly common in fenland and grassy places but I have not found it to be so, and neither has R. Revell in the small fens in the Cambridge area.

Saltern ear (*Amphipoea fucosa paludis*). The specimen that came to m.v. on 16.8.96 looks much more like this *Amphipoea* species than any of the others but the genitalia have not been examined. It is a fresh specimen and I am always reluctant to damage the body of a moth when it is the only one that I am likely to take! No doubt I will eventually have it confirmed in this way – if it is the Saltern ear, it may well be a first county record.

The Butterbur (*Hydraecia petasitis*). The foodplant, *Petasites hybridus*, is not at all common as many suitable sites have been drained. The moth does not appear to be a wanderer so perhaps it does persist at low densities here. One fresh moth came to m.v. light on 12.8.96.

Bordered straw (*Heliothis peltigera*). Three examples of this well-known migrant came to m.v. between 17.8 and 21.8.96.

Scarce silver-lines (*Bena prasinana*). This is an oak-feeding, woodland species and therefore a good record for the fens. R. Revell sees about one a year in the much more wooded city of Cambridge.

I would like to thank Ray Revell for his detailed comments on the status of these moths within the county of Cambridgeshire, and also the staff of the RSPB at Welches Dam for their continued interest and for the permission to visit the reserve.



# Agrilus sinuatus in Hoddesdon, Hertfordshire and surrounding areas

by Maurice Pledger (10214)

19 Granville Gardens, Hoddesdon, Hertfordshire EN11 9QB.

Having returned from holiday, the following day found me back at the log piles, and sure enough, providing the sun was shining, I still found a few beetles. While I was away a friend had found a few *Agrilus laticornis* on small oaks in the area. I still found *Agrilus angustulus* in twos and threes most trips, with a nice *Agrilus sulcicollis* on the 27th August. The last time I saw any was on the 31st August when I saw six *A. angustulus* at midday on the logs. The weather turned a bit after that and each subsequent trip I drew a blank. I think they may have gone on into September, given that I'd seen six on the last day. No doubt there were more about anyway.

On the actual day we went on holiday (28th July), on taking Bunny for his last walk before he went to the kennels, I found a hawthorn along the New River in Hoddesdon with a succession of D-shaped holes going up the trunk. On returning from holiday, I've since been putting my efforts into looking for more hawthorns with exit holes. Friends had told me about these, and I was convinced that the holes I'd been finding were those belonging to *Agrilus sinuatus*. The more I looked, the more I found. Hoddesdon does in fact seem to be a stronghold as it looks as though I am going to find it hard to actually see a tree without any in. That said, there does appear to be a pattern to these things. Referring to the videos taken of *A. angustulus* egglaying, *A. sinuatus* must go about things in the same way. Find a nice D-shaped hole, then let your eyes wander, meandering almost, up the trunk and you will find others. You can actually see the path taken by the adult as she walked up the trunk placing her eggs here and there.

As the literature states, sickly and distressed trees do seem to be the ones chosen. First of all they are all old trees with nice scaly bark. Odd holes can be found in most trees, but the ones which seem to be "just right" have quite a few things in common. Due to the fact that for some reason or other the trees are distressed, these ones often have the trunk exposed to sunshine because parts of branches are missing leaves, or the local kids have been climbing them and smashed branches off. Provided the tree has a nice position to catch the warm sunshine I can imagine the adults would prefer these sun-warmed exposed trunks.



Hawthorns which are healthy, and are very bushy with ivy crawling all over the main trunk tend not to have any holes in. I've found holes from about a foot off the ground to about as far as I can follow the succession of them up the tree. Secondary branches which veer off the main truck are also used, as are younger branches without scaly bark, provided there are holes in the main trunk. I've found holes in branches down to about an inch in diameter.

While nosing around the hawthorns I noticed something "wedged" in one, so I carefully cut it out. Sure enough it was a dead A. sinuatus, albeit headless - this was 18th September. Total length would have been 10mm. Since then I have been finding more, nine to date. Some I have broken, some have come out intact, the largest being 11mm. I think some are older than others, but I do think a few must be from this year. Given that these insects only tend to fly in warm sunshine, I would think that it would be a safe bet that at night they would just sit up the host tree in the foliage. I don't know, but I think putting a sheet under the tree and beating at night would show up a few insects at the right time of year; anyway, that is something I am looking forward to. The infected trees are all over the Hoddesdon area, and actually on the 100-acre estate where I live. Even the trees right next to all the houses have holes in them, especially the little park near Stanstead Road. Also lots of trees in the St Margaret's Community Woodland near the New River. That said, I've found them at Hertford and all places in between, including Broxbourne. While nosing around I have also found two nice clearwing pupae which were coming out of hawthorn. I take it they are odd examples of the Red belted clearwing.

Back to the D-shaped holes. In the main they are around 3mm in diameter, with odd trees showing holes of 4mm. A good tree with ideal position generally tends to have more holes, and also larger ones. Whether or not they are just good size beetles, or whether they belong to the larger females, I am not sure. Most of all this is pure guesswork anyway. The holes can be seen in the rougher bark, and if you carefully peel away the layers you can find the flattened tunnels the larvae made. Most holes I have picked away at just keep going in until the wood is too hard to move. One particular hole I found in an inch diameter branch however, was given special treatment bymy colleague Phil Jefferies at his workbench. First he cut a section two inches above and below the hole, then carefully split it down the middle several times and then planed it until he eventually came to the tunnel. We were both surprised when we saw the length and size of the tunnel, or rather, lack of it. At most the tunnel went in about 3 or 4mm, and then



diagonally in. At no time was it more than that distance from the exit hole. The tunnel was at most 10mm long, widest at the hole and tapering to a point, where obviously the larva was at its smallest. The surprising thing was the larva must have lived a whole year by which time it obviously got to its maximum size, then pupated and hatched. When you see the size of the tunnel and the shallowness of it, it is hard to see how it could have even moved let alone anything else. It was a good sized hole, and it was obviously successful.

Peeling away some thin bark on an old long-dead hawthorn I found a wonderful series of meandering flat tunnels, some parts of which were still full with the chewed powder-like wood. I took a lot of photos as it's a classic example, and given what I've said about the other one, they must vary somewhat. Obviously different factors contribute to this, but I can only guess as to what they'd be.

The beetles I have found wedged in the holes were just emerging. The intact ones had the head exposed and half the thorax, whereupon for some reason they died. Other holes which appear blocked are in fact the rest of the body (minus the head) wedged in, flush with the bark. Earwigs and other insects can be found in old holes too, as well as a small moth pupa, which at the moment is still alive. Rob Dyke is hatching that one, and we are interested to see what it is.

The D-shaped holes are sometimes upside down or on their side. Mostly they are with the flat side at the bottom; however, a great percentage are all over the place.

Phil also found a large long-dead oak tree opposite Sheredes School in Hoddesdon which at one time housed another Buprestid, probably *A. pannonicus*. The bark is very loose now, and very deep, up to two inches in places, especially at the base of the tree. The large holes are situated up to about two feet from the ground, and just within the bark. The tunnels do not go into the main wood of the tree. We have not found any more oaks with the holes but we are still looking! Next year can't come soon enough to try out all my ideas with these interesting beetles. At the moment I'm convinced that beating the foliage at night, and also placing a large white sheet under uninhabited hawthorns on hot sunny days will show up a few. Anyway, I'm going to put up with all the curious looks from passers-by and the weird conversations I've had trying to explain what the hell I'm doing. Still if they don't know me by now, they never will. To most of them it will come as no surprise!



# Distinguishing the two species of Copper underwing moths (*Amphipyra* spp.)

by Paul Waring (4220)

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In the late 1960s it was discovered that the Copper underwing in Britain consists of two separate species, Amphipyra pyramidea and Amphipyra berbera (Fletcher, 1968). In much of England and Wales the two species occur together. The differences between them are subtle but recognisable in both adults and larvae. It is also becoming clear that there are consistent differences in their ecology. This article aims to highlight the differences and what has been written about them. It is partly prompted by my recent visit to Northern Ireland in September (1998), where I found the local lepidopterists wondering whether Svensson's copper underwing, A. berbera, occurs in the province at all, because those so far examined all seem to conform to the original Copper underwing, A. pyramidea. It is only recently that Svensson's copper underwing has been confirmed from Ireland (e.g. Co. Clare, Wedd, 1995) so it will be interesting to see if it really is absent from the north. For the rest of us, the Copper underwings are one of the most frequent visitors to wine-ropes and sugaring mixture in August and September. They occur regularly in light-traps and are sometimes found in numbers roosting in hollow trees and other cavities. I have even found them at rest in empty oil drums. They are most abundant in woodland, scrub, hedgerows and gardens, becoming scarcer from Yorkshire northwards, where Svensson's copper underwing predominates (Sutton and Beaumont. 1989).

Figure 99S shows the adults of both species viewed from the upper and undersides. The most obvious difference between the two species is found on the underside of the hindwing. In the Copper underwing the dark band that divides the central portion of the wing from the outer edge is usually bold and black near the leading edge of the wing and split up into three discreet blocks by veins. There is a marked contrast between the ground colour on either side of this part of the band. Inside the band it is distinctly lighter fawn, almost a yellowish-cream, also making the discal spot distinct.

Svensson's copper underwing is also known as the Dusky underwing which is a good name because all its markings tend to be more dusky and indistinct in comparison with *pyramidea*. The dark band on the underside of the hindwing is more of a smear, seldom as dark as the Copper underwing, never divided crisply into blocks near the leading edge and with little contrast in ground colour on either



side of the band near the leading edge of the wing (see Figure 99T). Frequently the wing is a uniform greyish fawn on both sides of the band as in Figure 99S.

In both species the hind angle and trailing edge of the underside of the hindwing tend towards foxy reddish brown, usually extending right to the trailing edge of the wing and along the inner edge towards the body in Svensson's copper underwing but not in *pyramidea*.

The underside characteristics can be seen partially when the live moth is at rest in a clear plastic or glass container, but because of the way the wings are folded it can be difficult to be sure of the identity without holding the moth to unfurl its hindwings in full.

The species can be distinguished on upperside characteristics with practice, but it helps to have a series of identified specimens of both species or a photograph of the same for cross-examination. When fresh. the Copper underwing has quite crisp, bright and distinct markings on the forewings. In torchlight at night it looks smart and shiny with a high degree of contrast between the markings and the background colour. The Dusky copper underwing is just that and on worn specimens the markings can be hard to make out. In fresher specimens, the point of the lower of the two crescent-shaped markings on the inner third of the forewing projects marked further towards the tip of the wing than that of the upper crescent, as in a capital B. The differences are very clear in the illustrated specimens but are not always as extreme. This feature, which was first described by Nyst (1992) and repeated by Owen (1993) and Clancy (1997), seems to go consistently with the underside characteristics already described. Note that specimen 3 in Skinner (1984) is berbera not pyramidea (corrected in the second edition - 1998). Another feature visible from above concerns the palps on the front of the head. These appear to be longer and more obvious in pyramidea than in berbera in which they have a bright white tip and a fuller base of fluffy scales (Winter, 1988).

Now to the caterpillars. The differences are again subtle but become clearer when both species are available for comparison, as in Figure 99U. The lower of the two is the Copper underwing and is displaying the characteristic resting position of the species. The head is hunched into the body and the thoracic segments bearing the true legs have a prominent yellow side stripe and contrast in ground colour with the rest of the body. The point of the tail is usually yellowish-green. The caterpillar of Svensson's copper underwing above usually has a red tip to the tail in the final instar. Figure 99U shows other subtle differences such as a more elongate resting posture, greyish shading above the



lateral line and more prominent spiracles. The lateral line passes more continuously from thoracic to abdominal segments in Svensson's copper underwing instead of tapering almost to obliteration before widening again.

There appear to be differences in the larval ecology as well. It was reported in 1981, that when beating for larvae in Pamber Forest, Hampshire, in early June 1979, all the Amphipyra larvae he obtained from hazel, honeysuckle and crab apple were the Copper underwing. Only one larva of Svensson's copper underwing was found and that was from mature pedunculate oak (Quercus robur). Likewise, when I was beating large amounts of common broadleaved trees and shrubs all year round in Bernwood Forest from 1984-86 as part of my Ph.D. studies, I beat Copper underwing larvae from understorey species such as hazel, common and midland hawthorn, honeysuckle and birch but no Svensson's copper underwing, which was frequent in the light-traps but seemed to be associated with the oak canopy. These results reminded both Mark Shaw and me of something that our late Professor of Entomology at Oxford, George Varley, had told us independently but which does not appear to have been published, namely that during all his sampling of caterpillars from oak at Wytham Wood, Oxfordshire, for his famous studies of the Winter moth, Ophtheroptera brumata, he only ever seemed to find Svensson's copper underwing. It would be useful if members could see if such habitat differences apply in their local area. The time to beat for partgrown larvae of both species is May and early June.

Note that the adults in Figure 998 were all reared from larvae which differed as shown and that the adult in Figure 99T is the mother of the larva above it.

To be absolutely sure of your identification try to use more than one of the above characters.

Incidentally, the case of the Copper underwings highlights once again the value of voucher specimens. The discovery that there were two species not one, meant that earlier records could only be tied to one species or the other if the specimen could be checked. Thanks to collectors who had routinely represented such common species in their collections, it has been established that neither species is a recent colonist of Britain and that both have been widespread throughout the last two centuries of entomological recording.

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#### Some Buckinghamshire butterflies

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On the afternoon of 12th July 1999 I visited Bacombe hill near Wendover in Buckinghamshire to observe butterflies. I particularly hoped to see the Dark green fritillary (*Argynnis aglaja*), which I had seen there the year before. Bacombe Hill is a nature reserve on the escarpment of the Chiltern Hills, and is an area of typical chalk grassland, scrub and woodland.

The day was hot and sunny and I patrolled an area of grassland which contained a large number of thistles. As might be expected, the commonest butterfly present was the Meadow brown (Maniola jurtina). The Marbled white (Mellanargia galathea) was also very common, as was the Ringlet (Aphantopus hyperantus). I had not been patrolling long before I saw a male Chalkhill blue (Lysandra coridon) fly past, which came as a surprise, as I thought it was too early in July for this species. During the course of the afternoon I saw several more males of this beautiful butterfly.

After about ten minutes I saw my first Dark green fritillary of the day. It was great to see this large insect flying powerfully across the hill and settling on a thistle flower. During the rest of the afternoon the Dark green fritillary proved to be moderately common.

Other butterflies I saw that day were: the Small skipper (*Thymelicus sylverstris*), Large white (*Pieris brassicae*), Small white (*Pieris rapae*). Green-veined white (*Pieris napi*), Small tortoiseshell (*Aglais urticae*) and Gatekeeper (*Pyronia tithonus*).



### Final instar larval forms of *Hyloicus pinastri* Linn, the Pine hawk moth

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As Hyloicus pinastri is a particularly easy species to breed, many readers will be familiar with the larva, but I wonder whether many will have encountered its brown form. The existence of this variety was a revelation to me during the summer of 1998. I am not familiar with the late-Victorian volumes of Buckler, but the most accessible post-war illustrations and references to the mature larva can be summarised as follows. Stokoe says ". . . green . . . with a yellowish-edged reddish line along the middle of the back . . . ". There is no colour illustration, but the description is from South. Hyde shows this form in colour, as does Sauer. Carter and Hargreaves illustrate a slightly modified form which shows the brownish dorsal line extending down towards the line of spiracles at the joints of the abdominal segments. Their text acknowledges that the brownish colour "... sometimes extends down the sides to the level of the spiracles". This appears to be the form described in Heath. There is much reflected glare on photograph 25J in Porter (a problem I encountered myself, because of the shiny skin, when trying to photograph the larvae), but the specimen also appears to be of this form. However, Porter's description is of a much darker form, with green on the sides only (Plates 99Y & 99Z).

In the summer of 1998 I had the unexpected good fortune to be able to breed a large number of larvae of this species, and I was surprised to note that almost one third of the mature larvae were of an apparently undescribed dark form. On each of the nights of 5th and 8th August I took a gravid female *H. pinastri* in my garden m.v. moth trap. Although males periodically appear at sites in Slough, these were the first females ever to appear here. On the other hand, in some of the woods a few miles from the town, this moth is commoner than all other sphingids combined.

Both moths laid fertile ova, the second many more than the first. There were losses among the first instar larvae, but after this stage only two died and I bred almost a hundred through towards maturity. They were housed in a succession of ever-larger plastic containers, ending up with a battery of large plant propagators. Fresh food was provided every second day, which was hard work, as there were few Scots pines with branches within reach, except for sprayed young plantation trees.



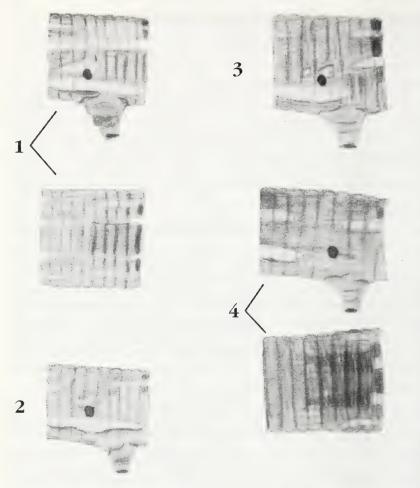


Fig. 1. Lateral and dorsal views of a segment of the lightly marked green form.

Fig. 2. Lateral view of form with slightly extended tan-brown markings and brown spots below.

Fig. 3. Lateral view of brown form with relics of dark green colour to rear of spiracles.

Fig. 4. Lateral and dorsal views of totally brown form.

As they grew in their final instar, so I released more and more back into the wild at sites where the moth is known to breed, thereby reducing overcrowding and easing the burden of feeding. It was interesting to note that the larvae invariably ignored the most succulent terminal needles on the branch sections provided.



Immediately after the moult into the final larval skin, all larvae were still green to a greater or lesser extent. Then, as with Acherontia atropos, some changed to overall brown, as in the accompanying illustrations. It is this form, which is distinct from the pre-pupation dulling of colours, which appears to have escaped description, at least in popular modern works. The overall colour of the brown form varied between that of the normal dorsal tan-brown stripe and a slightly darker and more bitter shade. In the brown form most of the normally whitish markings were yellower, although some were very pale brown, the dark dorsal spots were blacker and elongated blackish triangles appeared at the rear of each segment. In green larvae the colour of the undersurface varied according to the amount of brown present elsewhere. In those with only the narrow dorsal stripe wholly within the uppermost lines of white dashes, the whole of the undersurface was bright green, except for the feet. None of my larvae had green feet. Those larvae which were more extensively marked with tan-brown showed varying degrees of brown on the undersurface, ranging from a sparse row of spots to all-over dull brown, as in the brown larvae. Some of the dark larvae were not quite brown all over, having a few traces of dark green laterally, usually behind the spiracles on the affected segments. It is not easy to measure larvae precisely (should they be in repose or extended?), but all those which I kept to maturity measured some 65-75mm. The references quote a variety of figures, ranging from 60mm in Hyde to 80mm in Sauer. Although they do not lie straight, all 35 pupae which I have retained seem to be about 35mm in length. Stokoe quotes 11/2 inches (38mm) for the pupa, while Heath says 40mm. Perhaps mine are undersized, although I was not aware of any overcrowding or shortage of food which could have stunted them.

Several of the forms described will be seen in the accompanying sketches and photographs (Plate 99Y & 99Z).

Most moths in this area are darker than those I was used to previously from Hampshire and Somerset. Wild *H. pinastri* here are no different, and it will be interesting to see how bred specimens compare.

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### H. pinastri – an update

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All 35 pupae retained from 1998 produced perfect moths in 1999, most of which were immediately released. These were placed on wooden fencing which encloses two sides of my garden, on which they looked at a distance like large elongated knots, and none fell victim to birds. Eighteen came out between 3rd and 14th May, with the rest spasmodically between 6th June and 6th July: the later emergences included three on 9 June, five between 13 and 16 June and the last three, all females, on 6th July. All emergences occurred between 12:00 and 18:00 BST.

Some of the May moths were allowed to pair and the two females kept to lay for one night before release. The resultant larvae were released at local sites, as with the surplus larvae last year.

Despite my misgivings about the size of the pupae, the resultant moths were of a good average size. The largest and most lightly marked female spanned 92.5mm, using the *Moths of Great Britain and Ireland (MOGBI)* method (wingtip-centre of thorax-wingtip) and the largest male was 84.5mm. The largest New Forest specimens in my short series, which date from the 1960s, are 94mm and 86.5mm respectively. These sizes compare well with the 70-80mm quoted in *MOGBI*.

In general the earlier emergences were more strongly patterned than the later moths, which emerged over nine weeks after the first. There are relatively few Scots pines scattered around Slough and the *H. pinastri* from my town garden are little different to those from the New Forest, except that none that I have seen has the suffusion of very pale grey scales towards the wingtips which the finest New Forest moth display. Moths from pine plantations in local south Buckinghamshire woods can have a slightly darker ground colour. They can also be bigger: a worn female from Black Park measured 96mm without any cilia. Unfortunately, I can make no comparison with forms from East Anglia, as I have no experience of these.



### Zoological Catalogue of Australia

by Houston, W.K.K. & Wells, A. (1998) (eds). Vol. 23. Archaeognatha, Zygentoma, Blattodea, Isoptera, Mantodea, Dermaptera, Phasmatodea, Embioptera, Zoraptera. Melbourne: CSIRO Publishing, Australia xiii 464pp (ISBN 0643 06035 9). Available from CSIRO Publishing, PO Box 1139, Collingwood, Victoria, Australia 3066. Price \$120 plus \$8 postage (air) – Australian and New Zealand customers pay \$A, in all other countries prices are in \$US.

This volume is written by specialists and is part of a uniform series detailing taxonomic and biological knowledge of the Australian fauna. Volume 23 covers nine insect orders, namely the Bristletails, Silverfish, Cockroaches, Termites, Mantids, Earwigs, Stick and Leaf-insects, Webspinners and the little known Zoraptera. In addition to book form, the information is also used by CSIRO as a public information database.

This work will be of particular interest to the taxonomist, as it provides bibliographic references to genera, species and synonyms. Brief distribution and ecology notes are included for each species, following general introductory notes to each order and family. References are given, and indices to species and genera for each order.

As a specialist in phasmids, I comment on that section (Balderson, J., Rentz, D.C.F. & Roach, A.M.E. Phasmatodea – pp. 347-378, 402, 451-456), which I have used as a research tool since obtaining a copy of the proofs in early 1995. Publication has been eagerly awaited and, consequently, information is occasionally out of date, following research since 1995. For instance, Staelonchodes has become a synonym of Lonchodes, and Ctenomorpha marginipennis was recently found to have priority over Ctenomorpha chronus. The taxonomy of the fascinating Australian phasmid fauna is confusing, with some historic species hardly known at all and this publication will help researchers in quickly locating key references. Caution needs to be exercised when studying species, as the authors outline in the introduction. I can verify this first hand, as I recently transferred a species listed as a synonym of an unrelated species, to the genus Eurycnema; it was only by rearing the insect that I was able to establish that the type specimen (a nymph) was a valid species - Eurycnema osiris (Gray).



Although the phasmid section is an update of a useful listing by Vickery in 1983, there was one mystery repeated from that paper, which I recently came across. Parasipyloidea granulosa (Brunner) was described as Menexenus granulosus on p. 245 of Brunner (1907), not as Hyrtacus granulosa, p. 301. A few spelling errors have arisen (although correct in Vickery), as follows: p. 352 Haaniella grayi (should be grayii), p.365 Ctenomorpha salmacris (should be salmacis) and p. 375 Tropidoderus childreni (should be childrenii) - in some cases errors may have resulted from reliance on a recent unpublished listing of phasmids. Both this catalogue and Vickery list Eurycnema sternocerca instead of E. stenocerca. This species and Eurycnema cercata (described by Redtenbacher in 1902, not 1908) are both synonyms of E. osiris. The Asian taxa originally linked with Eurycnema goliath by Vickery (repeated in this work), represent a distinct species. Recent checks of museum collections by specialists have uncovered further information e.g. on the number of type specimen(s), but unfortunately this came too late to include in this work, but will be published in a world-wide listing of phasmids in due course.

This volume is a valuable listing, which researchers of the Australian fauna will wish to own, or refer to in an entomological library. Updates to the information provided can, of course, easily be made to the database to assist future researchers. It is only recently that taxonomic work has been undertaken on the Australian phasmid fauna (there have only been three species described since 1920, although I estimate that there are over 200 Australian species present in museum and private collections, against the 104 described in this volume plus some descriptions in press). It is to be hoped that researchers will be inspired by this fine volume to undertake serious research work.

Paul Brock

### The Western Palaearctic Zygaenidae

by C.M. Naumann, G.M. Tarmann, and W.G. Tremewan, published in 1999 by Apollo Books, Stenstrup, Denmark, 304 pages, including 12 colour plates, hbk, ISBN-87-88757-15-3, printed throughout on glossy paper, price around £59.

This book deals with 116 of the known species of the family Zygaenidae which occur in the region which is roughly defined as the Iberian peninsula, north Africa, Turkey, Transcaucasia, and the Caucasus. The family is clearly differentiated into three distinct subfamilies, Procridinae (44 species), Chalcosiinae (two species), and Zygaeninae (70 species). The text is in English and the front cover shows an excellent photograph of *Zygaena armena* at rest on a flower.



The short and informative Foreword by Dr Miriam Rothschild draws attention to a number of aspects which are relevant to the study of Burnet moths, and compares them with some moths which belong to quite unrelated families, particularly with regard to toxicity and to natural variation within species. After the introductory pages there are sections dealing with Zygaenid life-cycles, Structures and functions (illustrated by some excellent black-and-white photographs of ova and larvae and some highly magnified SEM photographs), Genetics and variation, Zoogeography, Fossil records, Ecology (with subsections on Habitats, Foodplants, Cyanogenesis (i.e. the production of HCN, hydrocyanic acid by all stages of Burnets and Foresters), Defensive biology, Relationships with flowers, Reproduction, Pheromones, Mimicry, Predation, Diapause, and Parasitoids). These are followed by chapters on Breeding, Collecting techniques, and History. The Systematic part, in four pages, lists only the current nomenclature, without synonyms. It precedes the main text of the book which gives a very good and fairly detailed description of each of the 116 species, (ten of which are known to occur on the British Isles), and includes good distribution maps, and information on forewing length, male and female genitalia, similar species, individual variation, geographical variation, distribution, ecology, behaviour, egg, larva, foodplant, pupa and cocoon.

The colour illustrations on the first six plates are of 318 life-size set specimens and are of excellent quality. The next five plates are a selection of photographs of moths and larvae in their natural habitat, and the final two plates show 12 scenic views of habitats.

The book is very well researched, and contains a large amount of very useful and interesting information in the main text. No obvious printing errors were found, and this book is sure to be of value to both specialists and non-specialists for many years to come, both for its biological information content and for the high quality of the illustrations. One important criticism of the book is that the drawings of both male and female genitalia of the 44 described species of the subfamily Procridinae are exact copies of the relevant drawings in *Forester Moths* by Efetov and Tarmann, whilst some readers may be disappointed by the lack of complete genitalia drawings of any of the species in subfamilies Chalcosiinae and Zygaeninae. For those who wish to acquire both books it would have been better if the genitalia of the Procridinae had been omitted and replaced by those of the other two subfamilies. A further very minor point is that number 3 on plate 7 is the exact same photograph as used on the front cover of *Forester Moths*.





### Stick and Leaf-Insects of Peninsular, Malaysia and Singapore

by Paul D Brock, Malaysia Nature Society, Kuala Lumpur 1999.

This latest book on stick and leaf-insects of the Malayan Peninsula and Singapore is a monumental work by a person who obviously loves the subject he writes about. South-east Asia had been colonised at various times in the last several hundred years by the English, the Dutch, the Portuguese and the French. Coupled with these Western invasions was the fact that the peoples of south-east Asia were poor and had little interest in studying their natural flora and fauna. Thus, the Western explorers and naturalists amassed a great number of south-east Asian fauna, including Malaysian and Singapore insects. These largely, were described and deposited in museums in Europe. For a local naturalist from Singapore or Malaysia to undertake a detailed taxonomic study of an order as little known as the stick and leaf insects would be near impossible in terms of time and expense. Brock's book therefore is of utmost importance. He had spent several years in research to check and re-check type and other specimens before the production of this book. His other searches have taken him to remote corners of Malaysia in search of live phasmids and yet at other times, to forgotten dusty corners, and shoe boxes in old creaky museums in Europe and elsewhere. This book therefore is a gem of writing.

Because Brock has travelled extensively in the region and has maintained contacts with all of the local entomologists, amateur and professional, he is able to write about much more than taxonomic characteristics of these insects. This work includes important aspects of individual "species" behaviour, foodplant, eggs as well as breeding requirements where they are known. The book will appeal therefore to naturalists, zoo-keepers, insect-farmers as well as school children who are keen on their environment and its lesser known inhabitants. There are sections on culture, making an insect collection, studying insects as well as the history of phasmidology in west Malaysia and Singapore.

Nonetheless, it is a very in-depth and scientific book and details the taxonomic status of 103 species and one subspecies from the region. Two new genera are described along with 15 new species and one new subspecies. A full catalogue of the species is included and locations of all type specimens stated clearly in full for those who would like to recheck specimens. It is indispensable therefore to the professional entomologist, museum curators and others who would like to go out and find a new species.

Francis Seow-Choen



### The Triangulin Mystery

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In a previous article about the Oil beetle (*Meloe proscarabaeus*) and its possible connection with *Anthophora*, a solitary bee (*Bulletin* **55**: 222), I mentioned that in Pembrokeshire there were difficulties in establishing this relationship, first reported by the legendary French entomologist Jean Fabre in 1853 and conveniently summarised by E.F. Linseen (1959). In fact on a particular section of the Pembrokeshire coast where the impressive beetle *Meloe* lumbers along in April and May (SM742237) *Anthophora* has never been seen and incidentally it is *Anthophora plumipes*, not *A. retusa* as reported in my original article. So what solitary bees do *Meloe's* larvae, known as triangulins, use for "hitch-hiking"?

You may recall that these 2mm long, slender, orange-coloured lice-like creatures must seize a hairy insect when it visits the flower they find themselves in and "hope" the visitor is a suitable solitary bee about to return to her more or less fully-stocked burrow, whereupon they dismount, eat her egg and the pollen/nectar provisions for her offspring.

When the sun shone at the above mentioned *Meloe* site (SM742237) the triangulins were very lively, squirming and raring up inside their thrift flowers and no doubt feeding on their abundant pollen and nectar, enough to keep them alive for days or weeks until the flowers went to seed, and they readily seized the bristles of a small paint brush, demonstrating their eagerness to "hitch-hike".

Since 1995 I have paid further visits to this site and confirm that triangulins were commonly and almost exclusively found in thrift flowers (*Armeria maritima*) in June. They had little choice as sheepsbit (*Jasione montana*), sea campion (*Silene maritima*), kidney vetch (*Anthyllis vulneraria*) and other species were either uncommon or absent, and although one supposes it is a matter of chance that triangulins climb the stems of thrift, their flowers are ideal, with abundant pollen and easily accessible nectar and floral crevices into which they can retreat when the sun is not shining or when it rains. Emerging from the ground they have a strong instinct to climb and obviously they don't all end up in thrift flowers and it would be interesting to know if the less fortunate triangulins are capable of returning to ground level and trying again. But the key question is, what insects visit the flowers in June, their hitchhiking season?

The answer was, scarcely any. Thrift flowers were not popular like, say, kidney vetch, bird'sfoot trefoil or sheepsbit. Moreover, many of



them had gone to seed, particularly towards the end of June, late May being their main flowering season in Pembrokeshire. But of the rare visitors, the very common bumble bee, *Bombus lucorum*, and perhaps *B. terrestris* were observed – and they are, of course, big enough and hairy enough to carry triangulins away, most probably to other flowers, acting as agents of distribution (It would be suicidal for triangulins to cling to their first carrier. They must be prepared to get off as readily as they got on). Also occasionally a fly, a solitary bee, a *Nomada* species or even a hairless Rose chafer would visit the thrift flowers.

What potential solitary bee hosts were active at the triangulin site in June, either digging or flying about? The answer – none – it was deserted. Both before and after June the site was extremely busy with the activities of *Andrena thoracica*, which appeared as early as March in 1998, continuing activities until the end of May, then reappearing in July and August as a second generation. This medium-sized, abundant, coastal species would make an ideal host for the Oil beetle whose large size requires that its larva has access to a major source of "bee-bread", *i.e.* pollen and nectar. Even if I had overlooked the presence of a small population of some other solitary bee species, it would be irrelevant as a major food source. This was an impossible situation, few or no carriers from thrift flowers to solitary bee burrows during June, the month when triangulins need them most.

Fortunately my habit of noting often seemingly irrelevant observations on outings may have paid off on this occasion. One visitor occasionally recorded on thrift flowers in June was a Nomada species. I didn't seek its identification as at the time this didn't seem relevant. Moreover when the Andrena thoracica colony at Porthclais (and for that matter, the colonies of other solitary bee species) was dormant in June, there were nearly always Nomada species buzzing and crawling about. My only previous experience of these parasitic visitors to the burrows of solitary bees was watching them enter burrows while the occupier was out "shopping" but before the burrows were closed. So why were *Nomada* present at this colony in June, when all the burrows of Andrena thoracica were closed? Presumably they must open some of the fullystocked burrows. Admittedly, as potential carriers, they are not particularly hairy, but they could pick up triangulins from thrift flowers and transfer them unwittingly to an A. thoracica cell when they enter it for their own devious purpose, thus bridging this critical gap in the Pembrokeshire Oil beetle's life-history. It is all getting a bit complicated with eggs and larvae, but it does seem feasible. Otherwise I can offer no solution to the triangulin mystery.





PLATE 99Q. Evening sunlight on the Trox aux Cerfs extinct (?) volcano crater at Curepipe.

Note the strange pool in the middle.

(Plester – Flogging a dead dodo)



PLATE 99R. Oleander hawkmoth larva (*Daphnis nerii*) found feeding on oleander at Flic en Flac on 13th December 1997. (Plester – Flogging a dead dodo)





PLATE 99S. On left: Copper underwing, *Amphipyra pyramidea* upper and underside. On right: The Dusky or Svennson's copper underwing, *a. berbera svenssoni*, upper and underside. (Waring – Distinguishing the two species of Copper underwing moth)



PLATE 99T. The female Dusky copper underwing from underside, with a larva she produced. (Waring – Distinguishing the two species of Copper underwing moth)





PLATE 99U. The fully grown larvae of the Dusky copper underwing above and the Copper underwing below.

(Waring – Distinguishing the two species of Copper underwing moth)



PLATE 99V. Adults of *greta oto* attracted to a bunch of groundsel. (Tampion & Tampion – Glancing at Glasswings)





PLATE 99X. The Lime hawkmoth (*Minnas tiliae*). (Meredith – Do some moths have a rubber fetish?)

Meredith - Do some moths have a rubber fetish?)



PLATE 99Z, Pine hawkmoth larvae, (Hayward – Final instar larval forms of the Pine hawkmoth) Centre, two green larvae, plus green with broader stripe behind; centre right, brown form, upper right brown form with snall green areas.



CLayward—Final instar larval forms of the Pine hawkmoth)

Described brown form vide small green area farcally, centre
orgal, green form with broad can brown super entering and a proper super factors or the super factors are super form with broad can brown super-centre and right, promise form with about conserved does super-



### **Glancing at Glasswings**

by Maureen Tampion (9170) and John Tampion

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For those who imagine all tropical butterflies to be like the giant birdwings or their many other gaudy relatives among the swallowtails a first meeting with the Glasswing *Greta oto* (Plate 99V) can come as something of a surprise. Here is an insect with a body not much thicker than a pencil lead and wings that are almost entirely transparent. Yet it is clearly a butterfly with its curled proboscis, long antennae and a few scales concentrated at the tips of the front wings as a white band with black beyond. This white band is the only thing that is clearly visible as it flits from one perch to another, quite regardless of whether or not the sun is shining.

In fact, despite its delicate frame and wingspan of only about 6cm, this is a long-lived butterfly that is known to be capable of migrating long distances. As much as 40 kilometres has been recorded in a day.

Greta oto is a typical member of the subfamily Ithomiinae of the family Nymphalidae, although some consider them to be distinct enough to merit a family of their own. Some idea of the wide range of appearance of the adults among the several hundred species of ithomiids can be seen from looking at the illustrations in Smart (1975). Except for an oddity from Australia, all the species are from the neotropical region of America, but unless you travel to those regions you are unlikely to come across any of them in the UK, except Greta oto. This species can be seen in some butterfly houses and is easy to breed here provided a few facts are understood. Despite its ability to fly long distances it shows no evidence of such a desire if allowed a free flight in even a relatively small tropical greenhouse. There it will provide an excellent introduction to the study of the habits and lifecycle of the ithomiids and tropical butterflies in general. The education and experience that this provides is an excellent starting point for the development of ex situ strategies for the conservation of tropical butterflies.

But before one learns about the butterfly one must first gain knowledge and experience of growing the larval foodplants and creating the right conditions both for them and, subsequently, for the butterflies. It should be understood that growing the plants alone is easier than breeding the butterflies. The larval foodplants for *Greta oto* are attractive in their own right and this means that they can be obtained without too much difficulty. Although the plants named by DeVries (1987), *Cestrum lanatum* and *C. standleyi*, are not readily available the butterflies will



lay on many other species such as *C. parqui*, which has masses of yellow flowers and *C. newellii* with burgundy/red flowers, both of which will keep their leaves over the winter in a heated greenhouse but will lose them if grown outside even in a sheltered spot. The tender species *C. nocturnum* with white flowers is also successful in a heated greenhouse. Whatever species you get (some others are listed in the RHS Plantfinder) you need to make sure that the leaves are either completely smooth (glabrous is the botanical term) or only very slightly hairy because hairy leaves will deter egg-laying. Most plants bought from garden centres and nurseries have been sprayed with insecticides, some of which may be systematic (*i.e.* they get inside the plant and move around with the sap) so unless you get them from someone who has actually grown the plants themselves you will have to wait a few months for any insecticide residues to break down and become inactive. All the species can be grown quite easily from cuttings. It takes a long time to grow a large plant from seed.

With plants growing well, a day temperature of about 21°C, a relative humidity of 60 to 90% and netted windows and doors you are ready to start with the butterfly itself. Remember you are not allowed to deliberately release any tropical species to the outside in the UK. Most people start with 10 or 12 pupae, which can be obtained from stock that has been bred in the UK over most of the year. The pupae are quite remarkable in that they are a bright jade-green with a shiny gold stripe and are folded up rather than of the elongated shape that is normal for many pupae. The species is continuously brooded and the adults emerge quite quickly under warm conditions. Just before they emerge the pupae turn very dark, almost black, and the uninitiated may even think that they have died! Because the pupae are small and fragile they are not at all easy to attach to a stick for emergence (as is normally done for tropical butterfly pupae) but the adults can emerge quite well from unattached pupae just left on tissue paper in the emergence chamber. Provided there is netting or a support nearby they will climb up and expand their wings quite normally. They should not be touched until the wings are fully hardened.

Being an essentially forest species, the adults do not need direct sunlight to be active and will fly in quite low light levels, flitting from one leaf to another probing with the proboscis. Flowers, sugar-water pads and almost anything else in the greenhouse, including their relatives that have died, are of interest to them. The males have andraconal hairs at the front margin of the hindwings which give off a pheromone that is essential for successful mating. The ithomiids are considered to be closely related to the danaids (milkweed butterflies) and like most of them must take up complex chemicals from plants before they can produce the pheromones. It is essential to hang up



bunches of plants, such as groundsel or ragwort (both *Senecio* species), that contain the necessary pyrrolizidine alkaloids. Roots should be left on the plants and the plants are probably best if wilted and shrivelled and even dead. Hung up and occasionally misted with water these plants will soon attract the butterflies, who will probe the remains to obtain the alkaloids.

Mated pairs will soon be seen, followed by the very tiny white eggs laid on the undersides of the *Cestrum* leaves a few at a time. The adults live an active life for a long time and eggs are laid over the lifespan, a few per day. This is to be expected from a butterfly with such a tiny body where the eggs mature a few at a time. The larvae of *Greta oto* are simple in appearance, without any prominent features and spend most of their time under the leaves. When first hatched they eat a hole in the centre of the leaf and only move to the edges when larger. Apart from the last instar they are a dull-green in colour but the last stage is quite attractive with a light-green back and a bright yellow stripe along the sides. Pupae are generally found on the underside of the leaves of the foodplant but are not attached very securely and may often drop to the ground below.

Words cannot describe the pleasure that is obtained seeing this species flying free in your own minature tropical paradise nor the educational experience of establishing your own self-sustaining colony, a first step on a long road of discovery.

### The Ghost swift moth in Staffordshire, 1998

by Jan Koryszko (6089)

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During the wet summer of 1998 when walking through waste ground, field and grass areas I noticed quite a number of empty pupal cases of the Ghost swift moth (*Hepialus humuli humuli* L.) sticking out of the ground. The ground was rock-hard after the rain which had been followed by sun and wind, drying the soil out. You would expect to find a number of these moths to be crippled, but this was not so. In the past I have found other species crippled by these conditions. Maybe because the larva spends its life feeding on various roots of plants underground, they are much tougher than most species. I have also noticed that there is a small dawn flight at times in favourable conditions, which is also seen in the Gold swift (*Hepialus hecta* L.) but the main flight is from a short time before dusk until dark, with odd individuals on the wing throughout the night.



### Soil fertilisation by Noctuid larvae

by John Notton (5459)

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I am not inclined to view lawn maintenance in my suburban garden as a high priority activity. However, when the amount of moss exceeds that of grass, some action must eventually be necessary! After a mowing session on 19th April 1999, some mossy patches were vigorously scarified with a spring-tined rake. Among the moss debris from about two square metres of lawn I found a number of Noctuid larvae of a sort I had not seen before, and I decided to try to rear them. Reference to The Colour Identification Guide to Caterpillars of the British Isles by Jim Porter suggested that the larvae were mostly of the Heart & club (Agrotis clavis), although similarities to pictures of larvae of several other related species did not allow these to be ruled out at that stage. A. clavis is also regularly taken in some numbers in the m.v. trap which I run in the garden.

The method I adopted is as follows – about 4cm of soil-less garden compost was placed in a large plastic container and a layer of the moss debris was placed over half of the compost surface, together with dandelion leaves as food on the other half. A larva-proof ventilated cover was placed over all and a total of 14 larvae were introduced. The moss was occasionally lightly sprayed with water in dry weather periods.

After recovering from their usual passive state, the larvae burrowed into the compost. Dandelion was readily accepted, with feeding taking place very largely at night. Sometimes the dandelion leaves were partially drawn into the larval burrows and those leaves were sometimes seen to be eaten during the day. By 4th May the larvae were apparently all fully fed – as measured by the lack of food consumption. When the moss and food debris were removed, three larvae were seen to have pupated on the surface of the compost. These were removed to an emergence cage.

I particularly noticed that the surface of the compost was free of frass and investigation showed that each larva had packed its frass into the bottom of its burrow. This led to fears about losses of the buried larvae or pupae due to mould or bacterial infection. The eleven remaining larvae were therefore carefully dug up and transferred to some fresh compost where they quickly reburied themselves. Some fresh food was added as a precaution but very little was taken at this stage. The whole container was placed in an emergence cage and results awaited.



Of the three surface pupae the first to emerge on 15th May was a Setaceous hebrew character (*Xestia c-nigrum*), followed by an *A. clavis* on 14th June and another on 15th June. Of the subterranean pupae, five more emerged on 18th, 22nd, 23rd, 24th and 27th June respectively and were all *A. clavis*.

On 1st July, I investigated and found that all six remaining pupae were dead. Two had died because other larvae had tunnelled through them and one of the "tunnellers" had also perished. The cause of death for the others was not established.

The most interesting point which comes out of this exercise is the effect that these larvae could have in the natural cultivation of the soil, an action which may complement that of earthworms. Although the soil under my lawn is no doubt more solid than compost from the bag, the larvae have a surprising ability to dig. In this case, not only do they help to make the soil more porous, but they actually place their frass as partially composed matter in packages at a little depth where it can be of direct benefit to plants. At seven larvae to the square metre, their efforts will not be earth shaking by comparison with earthworms, but there is no guarantee that I found all that were in my mossy areas!

There are some lessons here for someone wanting to rear these larvae. The method seems to have been successful up to the pupation stage as the larvae appeared fat and healthy. In future it would be better to put fewer larvae in one container to guard against accidental damage. I hope to try again next year – a good excuse for leaving the moss in the lawn! When I do try, I will not transfer all the larvae away from their frass to see if it could actually have some benefit for them.

Some Noctuid larvae are well known for burrowing and others live concealed amongst roots. Among moths most closely related to *A. clavis*, the burrowing habit is mentioned by Porter for the Coast dart (*Euxoa cursoria*) and the Portland moth (*Actebia praecox*), both of which burrow in sandy soils. However, the habit is not specifically mentioned for moths of the genus *Agrotis*, although it can be inferred in some cases from the details given.

So far, I have found no text which refers to this soil-fertilising action by ground-living Noctuid larvae in general, or by *A. clavis* in particular, nor to its possible ecological importance. I would be most interested to hear from anyone who has made similar observations or who already knows of the ecological effect and can direct me to an appropriate reference.



# An encounter with the Black-veined white (Aporia crataegi) on the banks of the River Yenesi, Central Siberia (June 1997)

by Dennis S. Burrows (6710)

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Having travelled fairly extensively over the former Soviet Union, the opportunity which presented itself in 1997 of a voyage of over a thousand miles down the mighty but little known Siberian River Yenesi almost to the Kara Sea seemed too good to miss. Our main concern was to avoid the scourge of Siberia, the mosquitoes, by travelling as early as possible after the river had thawed.

Thus it was that my wife, Pauline, and I found ourselves on 7th June boarding the M.V. Anton Chekhov at Krasnoyarsk, the capital of a vast Siberian region many times the size of the United Kingdom.

The journey from our transit airport, St. Petersburg, had, contrary to our expectations fuelled by previous experiences on Soviet local airlines, been uneventful. True, my wife's seat belt lacked one half, but the crew quickly rustled up a spare part. Otherwise the journey from St. Petersburg to Krasnoyarsk, a far greater distance than Gatwick to St. Petersburg was smooth and very comfortable with twice as much legroom than on western European airlines.

The Anton Chekhov is the only large passenger vessel operating on three and half months of the year, as the river is otherwise completely ice-bound. The ship itself has an interesting history: constructed in two parts on the Danube near Vienna, it cruised via the Black Sea, along the Don River, the Lenin Canal into the Baltic Sea around Norway, into the Kara Sea and then the Yenesi itself.

On 11th June at about 10.00am we went ashore, after sunbathing on deck the previous day at a remote spot between Tashino and Yenisseysk, a small town which was in earlier times the old Cossack capital before the advent of the Trans Siberian Railway brought Krasnoyarsk into prominence.

Ashore, we found ourselves in one of the few clearings on these richly forested river banks. A narrow muddy track led into coniferous forest or taiga. The weather was cool and damp with a temperature around 10 C.

On entering the forest we were struck by the unexpected variety of wild flowers which caused us to stop frequently to identify them wherever possible. Our walk of about two hours revealed hidden



treasures: pink and blue geraniums, blue polemoniums, white anemones through which were large patches of dwarf blue irises seemingly of a bulbous reticulate type species and abundant trollius. A rare ericaceous wintergreen subsequently identified as *Pyrola grandiflora* was very common and in full flower. Most exciting of all were two glorious species of orchid: our extremely rare lady's slipper and its even lovelier relative the spotted lady's slipper with its arresting red-purplish spots.

Lovely though all these flowers were, it was the numerous pale yellow vetches which took our eye. Hanging from these flowers, wings folded, heavily be-dewed and waiting for the morning sun were numerous Black-veined white butterflies. The butterfly must have been abundant in that area for on our return to the ship we saw several dead specimens on the shore of the river.

Going aboard the Anton Checkhov we found a small group of our compatriots examining a dead specimen of the Black-veined white which they had picked up. I was thus able to tell them a little of the history of this once common and well-established British butterfly, the mystery of its sudden demise after being so widespread, and the subsequent attempt by Sir Winston Churchill to re-establish the insect at Chartwell, which unfortunately proved unsuccessful.

P.B.M. Allan in his book *Moths and Memories* examined the background of this butterfly in detail and gives cogent reasons for its disappearance but there is still a mystery why a butterfly so common in other parts of Europe should have found our island conditions so unacceptable.

Walking the ship's decks later that day we saw bunches of flowers, including the orchids, in the cabin windows. We could hardly criticise, with such a wealth of wild flowers in such a small area of forest.

It would be interesting to know the specific foodplants of the Black-veined white in inhospitable Siberia. A magnificent recent publication *Guide to the Butterflies of Russia and Adjacent Territories* mentions Rosaceae and Vacciniaceae. The mention of acid-loving species as foodplants of the larvae seems strange to us. In Britain the butterfly was associated with Rosaceae often being found in orchards and is known for this on the Continent.

During the remainder of our trip down the Yenesi the weather was not conducive to Lepidoptera. We had beaten the mosquitoes by travelling earlier but beyond the Arctic Circle flowers had yet to open. We were about a fortnight too early. Our last port of call was at Ust Port. We went ashore by ship's boat moored half a mile off shore. There, in



mid-summer it was snowing. Only the huge Siberian huskies outside each hut seemed impervious to the cold, and we were glad to return to the warmth of the ship.

But the short Siberian Summer can be very hot. About 13 years ago at Bratsk we sweltered in temperatures of above 26°C, and travelling around Lake Baikal on the Trans-Siberian we marvelled at the wealth of flowers and the dozens of fritillaries and other butterflies flitting among them in sunshine and warmth.

Nor does the intense winter cold seem to affect the number and variety of butterflies. The newly published *Guide to the Butterflies of Russia and Adjacent Territories* referred to above mentions 96 species of butterflies alone in a Reserve outside Krasnoyarsk, although in Siberia such a Reserve bears no comparison to our minuscule ones.

#### References

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### Old Cornish Large blue butterfly records – Appeal for information

by Malcolm Lee

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As part of a study on the former occurrence of the Large blue, *Maculinea arion* (L.) in Cornwall for our County Millennium Butterfly Atlas, I came across an Edwardian record on the national database for "Portreath", supplied by V.E. Shaw apparently from the private collection of A. Morton. This is the only record for the area, but is some 50 miles south of the normal range along the far north coast of Cornwall and round to Clovelly in Devon. Monk's Wood have no further details on either name. In order that I can track this record down, I would be grateful for any information on either V.E. Shaw, or the whereabouts of A. Morton's collection. I would also like to hear from anyone with information on Cornish Large blues in old collections which have data labels showing specific locations other than Millook or Bude.

If you have any information on the above, please contact me at the address above or by phone on 01208 880106.



### Moths of Spurn Bird Observatory, Flintshire

by Colin Jones (9694)

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On one of my visits to Spurn Bird Observatory in late August 1998, I came upon large numbers of butterflies feeding on Sea aster, *Aster tripolium*, that had taken over a large area of what was once a grass field, that had been partly flooded by the ever-encroaching North Sea. Feeding on this plant were: Red admirals, *Vanessa atalanta*; Small tortoiseshells, *Aglais urticae*; Peacocks, *Inachis io*; Painted ladies, *Vanessa cardui* and also quite a number of Silver Ys, *Autographa gamma*.

Whislt staying at the Observatory, I was running three light traps nightly so I decided to run a 12-volt "Heath" type with a black light, in the more dense part of the Sea aster, curious to see just how many Silver Ys I could catch.

It is a fact that the moth feeds by day or night but, judging by that night's catch, it seems that they don't do both. Although it was a coolish night and the trap was not far from the sea, a total of 37 moths seemed fair. The most abundant were Flounced rustic, *Luperina testacea*, of which 22 were caught, 11 Square-spot rustic, *Xestia xanthographa*, singles of Mouse moth, *Amphipyra tragopoginis*, Large yellow underwing, *Noctua pronuba*, Lesser yellow underwing, *Noctua comes* and Sharp angled peacock, *Semiothisa alternaria*. Not a single Silver Y was caught but later that morning, they were again feeding as before.

On a previous visit with a friend in July, I ran four traps in various locations along the peninsula, over four nights. On the night of the 2nd, we had a moth-trappers' nightmare. All four traps were set up just before dusk and conditions were perfect, that is until around midnight, when a fresh westerly breeze got up and it turned quite cool. I know that siting of traps is important but near the coast you never know what the weather has in store in an hour's time. We had set an m.v. in the corner of a field, near the Humber shore, also exposed, a 15 watt u.v. on a pathway, between Sea Buckthorn bushes and quite sheltered. A blended m.v. was on the same path, slightly sheltered by sand dunes and Buckthorn.

By this time however, moths were very active around both the m.v. and u.v. traps so there was no question of giving up so we decided to leave all the traps on and hope for the best. The cool breeze continued throughout the night and this was reflected in the catch at day-break.



The total for the m.v. was 22, the blended m.v. 61, u.v. 116 and the 12 volt just two.

In the u.v. there were 69 Sand dart, *Agrotis ripae*, part of a total of 93 but the catch of the night was a Bedstraw hawk-moth, which was caught in the u.v. at 00:20 and was a first record of imago at Spurn.

## Do some moths have a rubber fetish? or

### On the importance of checking your facts

by Stephen Meredith (7374)

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This is a rather sad tale with perhaps a lesson to learn.

On 30th June 1998 I was walking home from the local shops when I saw what I assumed was a Poplar hawk-moth on the tyre of a car parked across the pavement. I put it into a plastic carrier bag I was carrying and when I reached home put it onto the trunk of a maple tree growing in the pavement to obtain some photographs.

Next morning I saw what looked like specks of green paint on the tyre of my car. I realised of course that the moth had laid some eggs and noted that she had reached the tyre via the car roof where she had deposited a residue of post-emergence fluid (Plate 99W). I had to go into Kingston, a distance of nine or ten miles, there and back, with the eggs spinning on the wheel. When I returned I managed to prise most of them off with a razor blade, about 100. In a few days they hatched but although I gave them sallow, aspen and later poplar leaves, they refused to eat – I wondered if their somewhat unconventional ride had disoriented them.

It was only when I started to write this and consulted my books on the Latin name for the Poplar hawk-moth, that I realised the ghastly mistake I had made as the moth was not a Poplar but a Lime hawk-moth (*Mimas tiliae*) (Plate 99X). The books I have referred to state that the larvae are not confined to lime but it seems that the poplar species are not favoured.

If there is a worthwhile message from this small tragedy, it must be to make sure that you check your species in all critical cases unless you are 100% sure of your identification.

It seems odd that it chose to lay eggs on the tyre of my car when there was a lime tree only ten feet (three metres) away.



### **Buprestids in Menorca**

by Maurice J. Pledger (10214)

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Our family holiday this year saw us spending the last two weeks of July out at Cala n' Bosch on the west coast of Menorca. Not being one to sit out in the sun I spent most of my time out and about with my net and pots, seeing what I could find in the limited time available. On arriving it didn't take me long to realise that flower-wise at any rate, we were miles too late in the season. Most of the island's flowers had been and gone. Most of what was left was all dried up or gone to seed. There's a joke in there going begging, but I'd better leave it well alone. The flower situation was a shame really as I'd set my heart on seeing, or at least trying to find, some native *Buptrestid* beetles.

I've slowly been falling in love with these beetles over the last couple of years, and most of my time over the past two summers has been spent searching for, and learning about, the English species. I've done well with the Agrilus, finding five species so far, all of them from the Broxbourne area in Hertfordshire. Prior to going I envisaged searching among lots of brightly coloured flowers, especially yellow ones, which apparently some of the *Buprestid* species visit. No such luck. What was yellow had been and gone. *Oleanders* and *Hibiscus* were out in force but to be honest, these never seem to pull in much of anything. A few bees and wasps but not much else.

### Buddleia

by Andy Joiner (9937)

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Arms arching aflame with royal colours,
Sovereign and sublime on the verdant throne,
A myriad of lustrous winged courtiers
Are drawn to your potent balmy sensors.
Nectar oozing, perfectly created
To intoxicate the hedonistic realm,
Where energised subjects weave fervently
Until life's ambition is satiated.



### Flogging a dead dodo

by Leigh Plester (2968)

BioFilm Oy, Ylä-Muuratjärvi, FIN-41800 Korpilahti, Finland.

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By 12th December, I was beginning to take stock of both filming progress and insects seen. Money, after all, was being paid out. What can I say about the insects? Back to the Rhopalocera again, there were few seen flying apart from the Lycaenids I have referred to and these seemed to be common only on the wasteland at Flic en Flac, bearing in mind that we were travelling by road most of the time. On our halfdeveloped estate I espied Mauritius' only swallowtail butterfly, flying at breakneck speed, a dark, flapping shape that graced my panorama, limited as it was by garden walls, houses, rearing bougainvillaea, yellow Allamanda, palms and papaija, only for a few fleeting seconds. Flattened out, Papilio manlius is black with lovely blue markings. In the female the blue coloration looks as though it has been put on by an artist's brush, for it is finer and more hazily sketched, more as Adalbert Snark put it in his introduction to the Papilios, like "smoke from the craters of volcanoes seen in dreams". Underneath, the male resembles some of the Southeast Asian swallowtails, being chocolate brown, with toothpaste advert teeth for decoration. Seen from below perched on a twig, the female could be an enlarged version of a satyrid like the Evening brown.

We had bumped into an African Monarch or African Queen (no, I'm quite sober) at some stage. This is the model (*Danaus chrysippus*) of the Diadem (*Hypolimnas misippus*) noted above. I cannot resist mentioning that neither species has any resemblance to the common sourpuss (lock him up, for Pete's sake). The Monarch (*D. plexippus*) also flies on Mauritius, as it does so often elsewhere, including Australia and North America, but we did not see any. At some stage, though, beady-eyed me had spied a male *Junonia rhadama*. This is a lovely insect, with a splendid blue sheen on its upperside, the female being less endowed with blue but having a more Nymphalid appearance, very similar to the medium-sized "Pansies" (*Precis* spp.) of South East Asia to which, if external appearances are anything to go by, it must surely be related. Historically, the butterfly, a native of Madagascar, did not appear in the Mascarenes until 1850-60. It feeds on a species of *Barleria* (called Herbe tac tac locally).

Inside our house, for a start anyway, there were some awesome *Tegenaria* house spiders, which habitually came out of the woodwork as the sun sets and our fuzzy TV came on. Built on the tropical cast



concrete style, the "bungalow" left few crevices for beasties like cockroaches which, however, had lain on their backs on the floor the evening we moved in, not out of respect but for the simple reason that they had expired. Outside, various insects passed through our front yard, or even lived there. Chief among the latter were what the locals cheerfully call mouches jaunes. Now, even I know that this means "flies yellows". The insect in question is actually a hymenopteron, scientifically called Polistes bebraeus. Members who have been to France, Italy or the like will doubtless have come across species of *Polistes*, the European socalled paper-making wasps which (in Corsica, for example) are coloured black and yellow. For "jaune" in the Mauritian Creole dialect read "orange". Add some dangling legs to a purposeful looking slim body, give the beastie a sting the effects of which can be cured (avers our mentor Staub on page 82) by the application of ammonia, and get out of the way as she buzzes across your yard to feed her grubs in a conical hat-shaped nest hanging from a convenient perch, such as a minor projection on a stucco wall, the branch of a shrub, or a homely porch beam you might absent-mindedly rest your palm on as the sun goes down.

Underneath, the nest can be seen to house a battery of hexagonal shaped chambers containing larvae but, unless you have a masochistic trait, I would not recommend poking a finger up into the tombs to tickle their chubby chins, for mother may soon reappear. My last quotation from Staub is that the yellow wasp's larvae in their inverted cone of a nest do not necessarily portend hard times to come, at any rate if you have the courage to harvest them – "Fried in butter, they provide a nutty flavour to accompany drinks". What drinks, I leave it to you to chalk up in your bar, as also to settle things with the police when they arrive.

Saturday 13th December – the day, date, and year are of little consequence on a trip like this, but I just thought you'd like to know. As the morning was hot, putting me in a good pre-Christmassy mood, I thought I'd take a stroll further south down the coast of Flic en Flac, a direction I had had little chance of exploring, since we always entered our area from the north, having first cut west across part of the island from the main road running north-south. Kalúla, with his penchant for weight lifting, and Anetta with her desire to film Charismatic Church services, were as much use on an entomological excursion as a teetotaller on a Far Flung Floyd programme. Both, I must hasten to add, had personally paid for their trips and expenses. So, if they wanted to heft or sing, as was their bent, they were free to do so.

Ten minutes away, on the last corner of the road before the expensive tourist resorts that, for example, the Finnish travel agencies



advertise as located in the "last tropical paradise" (eliciting the response, "Yes, but for how long when you bug-whisks are flooding the location with tourists?") - on the last corner of the penurious bug-hunter's road, there was an oleander bush some five metres high. Like most oleanders in the area, it was in fragrant bloom. Due to the fact that the wall of our "bungalow" complex had a number of fragrant smelling oleander bushes (Nerium oleander) planted along it, I had diligently searched for hawkmoth caterpillars. Consequently, I glanced up and down the branches of this new shrub with something approaching routine. My eves narrowed when I noted that several branches were almost devoid of leaves lower down and - where you would obviously have given up and gone home (Oh, yeah!) - I spent the next ten seconds examining the tips of the branches. Luck was my lady this morning, for resting at the tip of a succulent twig amid the remains of its breakfast, an Oleander hawkmoth (Daphnis nerii) larva reared, which is to say that the caterpillar's front third stood well out from the twig, while the remaining two thirds of its plump torso held fast to the characteristically smooth surface of the twig by dint of prolegs and claspers (Plate 99R).

Quoting straight from my laptop notes, "The larva is about 10cm long, pink/sandy coloured, with a pale stripe down the sides and some white speckling above this lateral line. The dorsal surface is mainly just the ground colour. The horn is short, curved and rather fleshy looking. The spiracles are black, surrounded by some horse-shoe shaped yellow blotches. It has started eating a flower but retracts as soon as disturbed. The top of the thorax has some perfect "brooding" eyes of yellow under stern black eyebrows. These look as though they are staring at the observer, as the head is pulled in under the caterpillar's body. All in all, very intimidating. The blossoms have a lovely perfume, which the caterpillar is systematically destroying. While there is a great deal of merit in painstakingly "hashing out" an article for any Bulletin, let alone this publication with all its intimacies, I feel one should occasionally try to pass on one's first impressions, jotted down while hopping over a farm gate, squatting innocently on an occupied ant hill, or placing a foot on pure air as half a cliff decides it's fed up with fighting gravity.

So, to continue from my laptop's diskette, recorded in the safety of our "bungalow" home with no more danger than that of a dangly legged yellow wasp that had buzzed indoors, in the sector dated Sunday 14 December: "The *nerii* larva went very dark and I found it under the bed in the spare room in the early hours of the morning. However, it was unwell and began to die, as though someone had trodden on it, which seemed very unlikely. So that was the end of the oleander hawk larva saga."



Three days later (Wednesday 17 December), to give poor old worn out Joe a respite, we hired our own car and headed inland up into the Black Gorges area, via a place romantically called Tamarin, located on our coast (the western one). We did some excellent scenic filming on the way, including flamboyants in full bloom, national park signs, land use, sugar cane plantations and forested mountains. In order to get to the lower entrance of the Black Gorges National Park, where they were constructing a new visitor centre, we had to drive along a road which had been fenced off from private property on both sides. During this journey we saw more butterflies than we had ever seen on the island. There were ten *Eurema* (Grass yellows) spp., five *Phalanta* (Common leopard), two *Danaus chrysippus* (African monarch), ten *Catopsila* (Migrants), and a *Papilio demodocus* in danger of getting a ticket for speeding.

Here it comes again, dear brethren (stimulated by the sight of Papilio demodocus), the inevitable Old Fogey reminiscence: Way, way back in 1959, when I was studying for my A-levels, I had my very own combinedshed-and-greenhouse on the council estate where we lived in the English Midlands. L. Hugh Newman, son of Edward Newman, one of the famous early authors and bug-bashers, was one of the few entomological dealers around and one autumn day his catalogue came up with pupae of African swallowtails, including (you've guessed it) P. demodocus. I still have, in the carefully preserved collection of my youth, the specimen I hatched from the chrysalis I waited for days to arrive during a wintry British week. The pupa hatched the following summer. If you're a butterfly freak, you'd just love the adult Citrus swallowtail (P. demodocus), which has dark, minutely yellow speckled wings blotched and slashed with canary yellow. The underside forewings are similar but the underside hindwings are adorned with lovely eyespots and yellow patches designed to give any butterfly lover the forceps-nipper's shakes. Wallpaper has never boasted patterns of this calibre, I assure you.

Apparently, the Citrus swallowtail was introduced on to the neighbouring island of Reunion in 1863 by a Dr Auguste Vinson, as a consequence of which, "Vinson's butterfly" became a swear word among the farming fraternity. Seven years later the butterfly had reached Mauritius. However, it is, Williams avers, showing his true love for nature, only a "minor pest of citrus and the damage caused by the larvae is more than offset by the aesthetic value of the adults." Wonderful.

Thursday 18 December. My hastily compiled jumble of computer notes read: "The small blues (*Zizula hyrax*) do not seem to exist beyond our wasteland, possibly due to the foodplant. *Mimosa* (sensitive



plant) occurs sparsely in a few places, e.g. the wasteland going up to the Black River area and near Curepipe. Hanging nests of the village weaver (*Ploceus cucculatus*) occur in many places. They use bamboo or other trees like tamarind, the nests swinging precariously in the wind. Later drove back through Curepipe and dropped Petri off at his gym. Picked Petri up and went to Joe's place, where we visited the grandparents for a meal. Inevitably we got lost (in the dark), but Petri picked up a route from Quartre Bornes and we followed his gymnasium bus route back home. A long day in all, covering some 170km."

A word to the lady members: Never, ever marry a weight lifter, unless you feel like ferrying the fellow around in your free time. At 10 a.m. on Friday 19 December (the next flipping day) we once again set off for Petri's gym, dumping him there, Anetta and I spending a long time looking for the Trou aux Cerfs volcano crater (Plate 99Q) just above the town of Curepipe. It would be a bit nerve-wracking sitting in your living room under the crater of an alleged extinct volcano, unless you had been born there and, unlike myself, did not feel that the thin crust was about to give way and deposit you into the Earth's foetid bowels at any moment. We got lost several times in the sprawling, crowded town and its suburbs, because we were unable to comprehend that anybody could actually want to live on the slopes of a volcano crater, rather than several miles above it. Only, it looks like the town has been built around the sides of the crater and it might be difficult to shift it.

Sprawled around the hill formed by the volcano there was the panorama of the town of Curepipe (pronounced Cur-peep) and distant plains and mountains running down to the sea with, right at the rim. dense vegetation flanked by a concentric footpath, and two metres lower down, by a circular tarmacked road, the path being used by a wide variety of joggers and the road by cars on their way up to the car park or just tootling around (Fig. 3). We left our hired vehicle at the car park. took a few video shots from the rim of the volcano (to loud comments from a bunch of fatty German tourists with apparently more wealth than manners), and found the narrow path that disappeared practically vertically down into the volcano. As though to bid us goodbye, a male black and blue Papilio manilus, representing Mauritius' single indigenous swallowtail species, swept low over some balsam flowers at the roadside, before continuing on his way towards some insectine party or other (Fig. 4). Swinging the heavy Betacam camera and my conventional camera bag around my neck. I left Anetta to her own devices with the spiky-ended tripod and began the descent towards what I feared might be the final thin crust of Mauritius. Why, if I





**Figure 3.** Looking down over the rim of the extinct (?) Trou aux Cerfs volcano, with pine forest lining the rim in the background and part of the town of Curepipe visible in the extreme upper left hand corner.



**Figure 4.** The south-west coast from halfway up the Black Mountains. Here you can expect to see many of the butterflies mentioned in the text flying, including Mauritius' very own Swallowtail, *Papilio manlius*.



inadvertently placed a boot on the wrong patch, I could quite conceivably push the plug out and plunge the entire island into the depths of the ocean with its mindless horrors. What a jolt for the overbooked travel agencies, eh! "Mauritius, sir? No way. That wretched Plester just booted it into the Indian Ocean."

Muddy and damp, the trail seemed bent on getting itself down as quickly as possible. Someone had been active with a jungle knife, for the thick overhanging vegetation had a hole cut through it, producing a long, leafy tunnel. Due to the steepness of the descent, the path wavered from side to side but never deviated from its prime intention, to get its pursuer to the bed of the extinct volcano as quickly as possible. It was necessary to constantly brush overhanging branches to one side as one slithered down over wet soil and damp decaying leaves. Fortunately the route was not quite hell, as there was an orchestra supplied, a lot of birds singing all at once, imitating angels in heaven. Some of these were red cardinals, others a small brown species with a soprano voice definitely not a sparrow, but you know how it is when slithering down a jungle path: everything in feathers appears the same. Without pausing to catch my breath, I can remark that the cardinal in actual fact is the Redfronted Madagascan fody (Foudia madagascariensis), colloquially called a cardinal simply on account of its bright red colour, or there again our Trou aux Cerfs bird could have been a Mauritius fody (F. rubra) which. however, has only a spillage of red passing right over its head and cascading on to its breast. Still very confusing to the bug hunter, inured to simple things like counting the warts on a fly's eyebrow or nonchalantly naming pug moths after ritually soaking their abdomens in caustic soda. Birds give me the creeps, they really do . . . "Watch that wet patch, Anetta!" (meaning "Don't drop the tripod in the filth, me dear. or you'll follow it.") - No, to me the red birds we glimpsed for precious seconds on the trail really looked like cardinals, that is, locally widely distributed red-fronted Madagascar fogies, I mean fodies . . . Sweating, I slithered to a stop under some overarching bamboo. Where's the bar, I wondered, peering about me.

Anetta drew to a stop, pointing dramatically at her gym shoes and saying, plaintively: "Leigh, do you really think it's worth going right down into the crater?" I gave her the off-the-cuff Crocodile Dundee look I reserve for underlings. "This ain't flipping Basting Stoke. We've come this far, so let's give it a flaming try." I like a bit of theatre now and then. As if on cue, a small butterfly detached itself from the wet mud, flitted for half a moment under the overarching bamboo and, as though exhausting itself, dropped back into the quagmire. We looked at



where it had been. Then it daintily pirouetted before, like a five year-old girl, it plonked iself down again, gathering up its dress (you could almost hear it sigh). To my credit I was not carrying a butterfly net, despite the fact that we were not in a nature reserve, so it was only later, at Flic en Flac (Plate 99R), that I was able to identify the species. Bamboo? Wet path? Right, it was a satyrid! Almost got you there.

Dark brown, with orange markings above, underneath very satyriddy in an orange and chocolate brown colour scheme (all short streaks, half-moons and a couple of black "eyes" just to convince the entomologist); wingspan somewhere between that of the large heath and the wall brown. Charming name, *Henotesia narcissus*, a true breath of spring. Very common everywhere (says Williams), but frequenting shady places, flying close to the ground, settling often: I could have told him that. But, the only specimens I saw in Mauritius in December were the few that were inhabiting that tiny, steep trail down into the volcano at Curepipe, about to be blown, warned my stars, into oblivion, along with my Betacam, guts, and companion.

After a vertical coup de grace (chicken pen made out of reeds), as the French say, composed of large, knobbly tree roots designed to sort the men from the boys - er, Anetta and I managed to reach the flat plateau 85 metres down at the base of Trou aux Cerfs (Plate 99Q). It was the first time that either of us had ever been on the bed of a volcano. I thought I felt a tremor. "Wow!" said Anetta, so that I almost dropped the Betacam in surprise. Normally her enthusiasm was directed at other things. Right in the middle of the flat volcanic plug was a mossfringed bog that would have been instantly placed on the danger list somewhere in Britain owing to its unusually bleached fringes and sinister central pool. The kind of thing green protesters could chain themselves to, prior to being dragged down into its murky depths cursing the collar and tie brigade. Around this weird habitat stretched an equally weird reed bed, it's backdrop a steeply ascending slope clothed with rainforest trees that suddenly gave way to pines as the cauldron neared its rim. Most of us have probably at least glimpsed the loony image manipulated stuff they put on TV for kids nowadays, so you can imagine what it is like sitting at the bottom of a breakfast bowl about to receive its helping of cornflakes. That is exactly what it felt like down there.

"Wow," uttered Anetta. "You've already said that once," I commented, while secretly feeling triumphant that at long last I had shown a townie – a Mauritian at that! – something new in nature. Give her her due, Anetta confided, just before she departed for England on New Year's



Eve. that one of the two memories of the trip which would remain with her always was "going down into the Curepipe volcano". Naturally, I was as pleased as punch. Okay, wait a minute, won't you!

Yes, those blue flowers over there, old son, if you'll stop tugging at my sleeve, really are morning glories. I, too, was very surprised to find them growing down here, right at the bottom of this volcano, particularly since the best still (=35mm) shot of such flowers is one I took of a large *Ipomoea* (morning glory) plant liberally decorated with blooms sprawling across a hedge only a stone's throw from the rim of Trou aux Cerfs (Plate 99Q) on another occasion. They are lovely blue trumpets with pale centres, exquisite examples of ephemeral natural art that wither and die soon after the sun has reached its zenith. We took lots of shots and recorded some sound in the cauldron before departing. As a final gesture, Anetta waved at a group of German tourists standing like porcelain miniatures way up on the rim. Shouldering the camera, I followed her example, using fewer fingers than she had.

Halfway up the steep pathway I picked up the first of the four African snails I was eventually to take back to Finland. It had by far the darkest shell I had seen, this being deep mahogany, and I can only say how sorry I was that it was the first of my new gastropod pets to die. giving up the ghost in May 1998, while I was away in Borneo. The other vivarium inmates are still thriving as I write (October 1998). In retrospect, going down into an extinct volcano was something of an experience, finding vet another small, some might say nondescript. satyrid, the icing on the cake. Easily said, but true: if I had my time over again. I think I'd like to study the life cycles of satyrid butterflies. members of the grass family being so numerous and also so important to mankind. As we drive away down the tarmac road encircling the crater of the volcano towering over Curepipe (Ffig. 4). I recollect that we should have picked Sheik Kalúla up from his weightlifting parlour over two hours ago. Well, I'm not married to him, and quite honestly I rarely find the strength to lift a pair of forceps these days. "Ah, good show, Henri, a really cold pint. Just the jot!"

To be continued . . .

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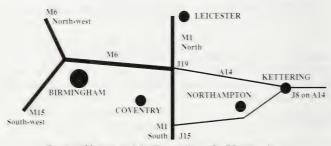
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# DATE FOR YOUR DIARY! AES Exhibition 2000

Kempton Park Racecourse

Saturday 7th October

11.00am - 5.00pm



The front cover of the Bulletin shows the Hoverfly, Volucella zonaria.

This species, belonging to the family Syrphidae, this fly is in Britain in local areas in the south. The fly is easily identified by its size and colour and will be found on the wing from May to September mainly in wooded areas. The larvae of *Volucella* species typically live as scavengers in nests of bees and wasps, feeding on dead and dying insects and other species.

Photo: Nick Holford.

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December 1999

# **Editorial**

As another year and the century (depending upon your viewpoint) draws to a close I would like to thank everyone who has helped in the running of the Society during the year. A Society, such as ourselves, that relies on volunteers to run it needs help in many aspects and all help that is received, however small, is greatly appreciated. If you feel that you can spare a little of your time to help in some way, please get in touch with us at the usual address.

The *Bulletin* will be undergoing some changes over the next few months in terms of the way in which articles are included. We have decided to increase the editorial team to help ease the burden from my shoulders which will allow articles to be written on subjects which members request. If you feel that you may be able to help with some editorial duties or would like to contribute in some way please get in touch and I will give you more details.

The two main AES events of 2000 have been provisionally booked. The AGM and Members' Day will take place on Saturday 15th April 2000, we hope at the Natural History Museum, and the Society's exhibition will take place at Kempton Park on Saturday 7th October.

The AES/English Nature Slide Pack has now been reprinted and is available from the PO Box address for £35. The 48 slide set covers four habitats and is accompanied by notes relating to the slides. The price includes postage and packaging and cheques should be made out to the AES.

Finally, I would like to wish all members a very Merry Christmas and a very prosperous start to the new Century on behalf of the Society and we look forward to seeing you during the next twelve months.

Wayne Jarvis





# The sagacity of some insects: to the author of the bee

submitted by P. Lawson (10052)

42 Marine Road, Port Bannatyne, Isle of Bute PA20 OLW, Scotland.

From: The Complete Works of Oliver Goldsmith (1728-74) Sir,

Animals in general are sagacious in proportion as they cultivate society. The elephant and the beaver show the greatest signs of this when united; but when man intrudes into their communities, they lose all their spirit of industry, and testify but a very small share of that sagacity, for which, when in a social state, they are so remarkable.

Among insects, the labours of the bee and the ant have employed the attention and admiration of the naturalist; but their whole sagacity is lost upon separation, and a single bee or ant seems destitute of every degree of industry, is the most stupid insect imaginable, languishes for a time in solitude, and soon dies.

Of all the solitary insects I have ever remarked, the spider is the most sagacious, and it actions to me, who have attentively considered them, seem almost to exceed belief. This insect is formed by nature for a state of war, not only upon other insects, but upon each other. For this state nature seems perfectly well to have formed it. Its head and breast are covered with a strong natural coat of mail, which is impenetrable to the attempts of every other insect, and its belly is enveloped in a soft pliant skin, which eludes the sting even of a wasp. Its legs are terminated by strong claws, not unlike those of a lobster; and their vast length like spears, serves to keep every assailant at a distance.

Not worse furnished for observation than for an attack or a defence, it has several eyes, large, transparent, and covered with a horny substance, which, however, does not impede its vision. Besides this, it is furnished with a forceps above the mouth, which serves to kill or secure the prey already caught in its claws or its net.

Such are the implements of war with which the body is immediately furnished; but its net to entangle the enemy seems what it chiefly trusts to, and what it takes most pains to render as complete as possible. Nature has furnished the body of this little creature with a glutinous liquid, which, proceeding from the anus, it spins into thread coarser or finer, as it chooses to contract or dilate its sphincter. In order to fix its thread when it begins to weave, it emits a small drop of its liquid against the wall, which hardening by degrees, serves to hold the thread very firmly. Then receding from the first point, as it recedes the thread



lengthens; and when the spider has come to the place where the other end of the thread should be fixed, gathering up with its claws the thread which would otherwise be too slack, it is stretched tightly, and fixed in the same manner to the wall as before.

In this manner it spins and fixes several threads parallel to each other, which, so to speak, serve as the warp to the extended web. To form the woof, it spins in the same manner its thread, transversely fixing one end to the first thread that was spun, and which is always the strongest of the whole web, and the other to the wall. All these threads, being newly spun, are glutinous, and therefore stick to each other wherever they happen to touch; and in those parts of the web most exposed to be torn, our natural artist strengthens them by doubling the threads sometimes sixfold.

Thus far naturalists have gone in the description of this animal: what follows is the result of my own observation upon that species of the insect called an house spider. I perceived about four years ago, a large spider in one corner of my room, making its web, and though the maid frequently levelled her fatal broom against the labours of the little animal, I had the good fortune then to prevent its destruction, and I might say, it more than paid me by the entertainment it afforded.

In three days the web was with incredible diligence completed; nor could I avoid thinking that the insect seemed to exult in its new abode. It frequently traversed it round, examined the strength of every part of it, retired into its hole, and came out frequently. The first enemy, however, it had to encounter, was another and a much larger spider, which, having no web of its own, and having probably exhausted all its stock in former labours of this kind, came to invade the property of its neighbour. Soon then a terrible encounter ensued, in which the invader seemed to have the victory, and the laborious spider was obliged to take refuge in its hole. Upon this, I perceived the victor using every art to draw the enemy from his strong hold. He seemed to go off, but quickly returned; and when he found all arts vain, began to demolish the new web without mercy. This brought on another battle, and, contrary to my expectations, the laborious spider became conqueror, and fairly killed his antagonist.

Now then, in peaceable possession of what was justly its own, it waited three days with the utmost impatience, repairing the breaches of its web, and taking no sustenance that I could perceive. At last, however, a large blue fly fell into the snare, and struggled hard to get loose. The spider gave it leave to entangle itself as much as possible, but it seemed to be too strong for the cobweb. I must own I was greatly surprised when I saw the spider immediately sally out, and in



less than a minute weave a new net round its captive, by which the motion of its wings was stopped; and when it was fairly hampered in this manner, it was seized, and dragged into the hole.

In this manner it lived, in a precarious state, and Nature seemed to have fitted it for such a life, for upon a single fly it subsisted for more than a week. I once put a wasp into the nest, but when the spider came out in order to seize it as usual, upon perceiving what kind of an enemy it had to deal with, it instantly broke all the bands that held it fast, and contributed all that lay in its power to disengage so formidable an antagonist. When the wasp was at liberty, I expected the spider would have set about repairing the breaches that were made in its net, but those it seems were irreparable, wherefore the cobweb was now entirely forsaken, and a new one begun, which was completed in the usual time.

I had now a mind to try how many cobwebs a single spider could furnish, wherefore I destroyed this and the insect set about another. When I destroyed the other also, its whole stock seemed entirely exhausted, and it could spin no more. The arts it made use of to support itself, now deprived of its great means of subsistence, were indeed surprising. I have seen it roll up its legs like a ball, and lie motionless, for hours together, but cautiously watching all the time; when a fly happened to approach sufficiently near, it would dart out all at once, and often seize its prey.

Of this life, however, it soon began to grow weary, and resolved to invade the possession of some other spider, since it could not make a web of its own. It formed an attack upon a neighbouring fortification with great vigour, but at first was vigorously repulsed. Not daunted, however, with one defeat, in this manner it continued to lay siege to another's web for three days, and at length, having killed the defendant, actually took possession. When smaller flies happen to fall into the snare, the spider does not sally out at once, but very patiently waits till it is sure of them; for upon his immediately approaching, the terror of his appearance might give the captive strength sufficient to get loose; the manner then is to wait patiently till, by ineffectual and impotent struggles, the captive has wasted all its strength, and then he becomes a certain and easy conquest.

The insect I am now describing lived three years; every year it changed its skin, and got a new set of legs. I have sometimes plucked off a leg, which grew again in two or three days. At first it dreaded my approach to its web, but at last it became so familiar as to take a fly out of my hand; and upon my touching any part of the web, would immediately leave its hole, prepared either for a defence or an attack.

To complete this description, it may be observed, that the male spiders are much less than the female, and that the latter are oviparous.



When they come to lay, they spread a part of their web under the eggs, and then roll them up carefully as we roll up things in a cloth, and thus hatch them in their hole. If disturbed in their holes, they never attempt to escape without carrying this young brood in their forceps way with them, and thus frequently are sacrificed to their paternal affection.

As soon as ever the young ones leave their artificial covering, they begin to spin, and almost sensibly seem to grow bigger. If they have the good fortune, when even but a day old, to catch a fly, they fall to with good appetites; but they live sometimes three or four days without any sort of sustenance, and yet still continue to grow larger, so as every day to double their former size. As they grow old, however, they do not still continue to increase, but their legs only continue to grow longer; and when a spider becomes entirely stiff with age, and unable to seize its prey, it dies at length of hunger.

# **Maggot Mystery**

by Ian McClenaghan (2499)

Marstonside House, Welsh Road East, Southam, Warwickshire CV33 ONE.

Recently my wife Rosemary brought home a pint of blue-bottle maggots from an anglers' shop. We left the mature maggots in the garage over the weekend until she could take them to work. She uses the adults to pollinate the flowers of *Brassica*s which she studies.

The mature maggots were very active but not being fed and after the first night it was thought wise to leave the lid off the plastic container in case they suffocated. Interestingly, over-night many had packed themselves vertically, head down so that the breathing spiracles were in the most exposed position. The next morning about three-quarters of the maggots had disappeared! The bucket they were in has nearly vertical 18cm sides and I have examined the container dozens of times since and never seen a maggot trying to climb up the side. I did notice a number of maggots moving on the table in the garage.

The question is, how did the maggots get out? They couldn't climb the slippery side of the container. If a bird, rat or other animal had climbed in and eaten them in the container there would not be any maggots on the table and the garage is pest-free anyway, the apples stored there being ungnawed by rodents.

If any reader can throw light on the mystery, maybe they could have their explanation in the next *Bulletin*.



# Obituary: Richard G. Warren

It is with sad news that I must inform members of the death of Mr R.G. Warren, aged 86. He died peacefully at New Park House, Trentham. Staffordshire on 11th January 1999.

Richard Warren was the county Lepidoptera recorder for Staffordshire, and over the past 22 years Richard's notes and records have appeared in numerous publications. Richard was a well-known entomologist in the Midlands and further afield. His interest in entomology dated from 1925 when he joined the North Staffordshire Field Club. In 1933, he pursued his interests with the entomology section and in 1951 succeeded H.W. Daltry as Chairman.

My first contact with Richard was almost 30 years ago. We corresponded for many years and finally met through Mr Geoff Halfpenny, the then Natural History Keeper at the City Museum. Hanley, Stoke-on-Trent, Staffordshire. We became good friends and often met at Richard's home. He often spoke of the old days, and showed me specimens that he had taken all those years ago. Richard was a specialist in the microlepidoptera and was one of the country's leading authorities. He published six Lepidoptera atlases of the Lepidoptera of Staffordshire, a checklist of Staffordshire butterflies and moths and his final publication was the smaller moths of Staffordshire. Richard published numerous articles in most entomological journals over the years and his records appeared in a number of entomological books.

I was indeed fortunate to have had Richard as a special personal friend – knowing Richard enriched the lives of so many amateur and professional entomologists. I was honoured to have known such an eminent entomologist.

Jan Koryszko (6089)

AES/English Nature Slide Packs The 48 slide set of high quality invertebrates from Grassland. Heathland, Woodland and Wetlands is once again available. Orders may be sent with payment of £35 to AES Slide Pack, PO Box 8774, London SW7 5ZG. All cheques should be made payable to the AES.

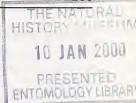


# The ecology and conservation of ponds

by Sharon Flint (10425)

7 Church Brow, Halton, Lancaster LA2 6LS.

# Introduction



My studies on water bodies have taken me from some of the highest tarns of Cumbria to the lowland ponds of North Lancashire. Through my survey work I have begun to gain a real understanding of how invertebrate communities differ between small water bodies such as ponds. Ponds have inherently complex ecologies, and this is one reason why such small systems have been sadly neglected in contrast to the in-depth studies carried out on larger systems such as lakes. This, however, is slowly changing through the work of Pond Action and ecologists are beginning to turn their attention to smaller systems for detailed study.

# **Ponds and Tarns**

There are estimated to be about 300,000 ponds in Britain, many of which are situated on agricultural land and are used as stock watering holes. The pond conservation group's (1993) definition of a pond is "a small body of water, between 1m² and 2ha in area, which usually holds water for at least four months of the year". The Lakeland high tarns are of two main types. The combe or corrie rock basin tarns at valley heads, close to peak summits, were created by glacial ice scouring thousands of years ago. Meltwater tarns are found on the lower ridges or hanging valleys and are bound in by a terminal moraine (rock debris) carried by the advancing ice sheet and then dumped as the glacier melted, though not all corrie tarns have a moraine (Drew 1995). Corries occupied by tarns can be remarkably deep for their size. Blea Water, above Haweswater, has an area of 0.173 sq.km and is 63.1 m (207 ft) deep (Fryer 1991).

Deep lowland tarns such as Blea Tarn in little Langdale, formed when the ice flowing down Great Langdale slid down into the valley. When the ice returned a huge lump was left stranded where Blea Tarn now lies, in what was probably already an ice-filled hollow. This "iceberg" would have persisted for a long time, gradually settling deeper into its hollow, eventually to melt and produce the now 7 m (23 ft) deep Blea Tarn. Semi-natural ponds have also been created by humans and tarns have been artificially dammed and exploited for years. There is no accepted definition of how large a tarn should be. I have surveyed tarns which would be considered lakes by some people and others which some would call ponds. The difference lies in their mode of formation.



# The Littoral Zone and its associated Macrophytes

The littoral zone is defined as the area of shallow water, and around lake shores, where light penetration extends to the bottom sediments. This enables colonisation by rooted plants (Allaby 1994). The littoral zone can be divided into three subzones of rooted plants. Firstly the emergent macrophytes, plants rooted in aquatic soil and projecting above the water surface; these include sedges (Cyperaceae), grasses (Gramineae), and rushes (Juncaceae). The next zone is occupied by the floating leaved macrophytes, which have at least some of their leaves floating on the water surface and include the water lilies (e.g. *Nuphar*) and several pond weeds (*Potamogeton*) amongst others. Thirdly, submerged macrophytes; these normally extend farthest from the shore and include such plants as *Myriophyllum*, *Ranunculus* and many species of *Potamogeton* as well as the troublesome *Elodea*.

# The roles of aquatic macroinvertebrates

Evidence in the literature suggests a strong positive correlation between macrophyte diversity and macroinvertebrate diversity. I have found this to be the case in my own studies. In the British Isles there are approaching 3,000 species of aquatic invertebrate (Maitland 1977) and nearly twice as many species of aquatic macroinvertebrate as there are of all birds and flowering plants combined. Littoral macroinvertebrates are one of the most diverse groups of species and are sensitive indicators of environmental conditions. They are often ubiquitous and abundant and so can be very useful in long term monitoring programmes for conservation purposes.

Aquatic macroinvertebrates are a food source for other organisms, so providing a vital link in the "food chain". Some are shredders of living plants and animals and in the initial stages of the detrital food web; other are grazers of plant biofilms and some can act as substrate stabilisers. Chironomids in particular, through making their larval tubes, help bind the sediment which can be useful to colonising plants. Some species, even of carnivorous macroinvertebrates, have been found to be closely associated with particular species of macrophytes. It is unclear to what extent this is related to plant morphology and how much to food availability. The interactions between macrophytes and invertebrates are complex and not fully understood.

# Factors affecting colonisation, distribution and diversity of aquatic macroinvertebrates

# Physical ability and habitat suitability

Whether an organism can successfully colonise a habitat depends, initially, on its ability to reach the habitat. In the insect world it helps if



you possess a working set of wings, but even when the insect arrives, the pond environment may not be suitable for it to exploit. Organisms have evolved to exploit space, food and time differently thus enabling them to coexist. Consequently, even in the unlikeliest (looking) of ponds one can often find a complex community flourishing and changing over the course of the year. It is important to point out that even in the most sparsely vegetated ponds and seasonal ponds, which may dry out annually, there may be specific species and communities which are characteristic of those particular ponds. These organisms have become adapted (Begon, Harper & Townsend 1990) to living in their own specific set of environmental conditions.

# Aquatic macrophytes

The aquatic plants colonising the littoral zone are crucial to the survival of most aquatic invertebrates, the plants' structural diversity plays an important role in the animals' survival. They provide food and shelter from predation, especially predation by fish. They provide a substrate for aquatic mites, and other invertebrates, which bore holes into the stems to lay their eggs. Dragonflies and damselflies use them as perches on which to emerge from larval skins and dry out in the sun as well as for oviposition sites. Leaves, flowers, stems, rhizomes and roots, are all exploited in some way by phytophagous invertebrate animals. The epiphytes and periphytes which cover the plants are grazed by aquatic invertebrates, particularly snails but also many species of beetles. Some species of water beetles lay their eggs amongst aquatic vegetation or in the roots of plants.

# Water depth and Bathymetry

The bathymetry or general shape-depth profile of the pond will affect the types of micro-habitats which will be able to develop. Because of the shape-depth characteristics of the pond horizontal and vertical temperature differences can exist which affect the life cycles of aquatic organisms. The ability to migrate from one area or depth to another is often a crucial part of an aquatic animal's life and it has been found that many make diurnal and nocturnal migrations.

Turbidity (due to sediment and detritus in the water) and water depth, affect light availability, which directly affects plant growth. This in turn affects colonisation by animals. Most researchers have found that the majority of invertebrate species tend towards shallower water where there is a higher diversity of aquatic vegetation. Many invertebrates, however, specifically exploit the open water, the water surface and the benthos.



# Temporal and seasonal differences

Temporal differences as well as seasonal differences in macro-invertebrates can be related to the growing season of the plants, the life cycles of the animals being harmonised with the growth cycle of the plants. Photoperiod and temperature are known to be major factors in life cycle timings. Emergence patterns are different for different species. Seasonal succession enables habitat partitioning allowing a larger number of species to occupy the pond because competition is reduced.

# Food preferences

Aquatic invertebrates exploit a wide spectrum of food resources. Some are considered specialists and some generalists, though a better definition is "ecological versatility". Ecological versatility is a measure of the degree of matching between the fitness gained by utilising resources and the relative availabilities of those resources. Some species are more versatile than others and are able to switch to different food sources in different habitats. This may give them an edge in survival terms.

The factors which determine colonisation, distribution and abundance of aquatic macroinvertebrates in ponds are complex. Other important factors include inter- and intra-specific competition, water and sediment chemistry, permanence, sediment physical composition, wave action, fish and waterfowl.

### Pond structure

# Marshy areas and the drawdown zone

Seasonal fluctuations in water level (seasonal drawdown) is a natural process in the life of ponds. The water level in individual semi-natural ponds may fall considerably in the summer. This provides a highly diverse habitat known as the drawdown zone around the margins of the pond, which can be exploited by all manner of invertebrates. 85% of wetland plants occur in this zone, with many being restricted to it (Biggs *et al* 1994).

A complex mosaic of habitats develops, including bare muddy margins, where Carabid beetles such as *Elaphrus riparius* occur. The muddy edges are exploited by a wide range of beetles, bugs and spiders. Some dragonfly species, trichopterans and particularly dipterans lay their eggs in the drawdown zone. The life cycles of many macroinvertebrates involve an aquatic stage and a terrestrial one so the surrounding land use and the drawdown zone are important to the completion of the various life cycle stages. Megalopterans (Alderflies), in particular *Sialis lutaria* take two or three years to complete their life



cycles. *S. lutaria* lays its eggs between May and July on vegetation overhanging the water. When the larvae emerge they simply drop off into the pond water. The offspring spend their first winter as middle instar larvae. In the second year larvae continue growing, the second winter spent in the final instar. Pupation takes place in mud or soil, often in the drawdown zone.

Water of only a few centimetres depth around the pond edge can provide another habitat for aquatic invertebrates. Marginal grasses provide material for the case-building caddis *Limnephilus lunatus*. Decaying reed stems provide two other case building caddis *L. flavicornis* and *L. marmoratus*, with material for their, tangentially arranged, cases.

# Conservation and management of ponds for aquatic invertebrates

Remarkably little is known about the effects of management on ponds (Biggs *et al* 1994), yet many ponds are dredged, de-silted and cleaned out every year. Ponds support their own distinctive flora and faunal communities and it is important to take this into consideration in management planning.

Ponds which dry out annually and ponds in semi-natural areas need careful and considered management. Annual drying out is not a problem and ponds of this kind often support rare species which are restricted to this type of habitat. Initial monitoring and surveying of the pond will first be necessary before any management activities start and management plans are drawn up. This will provide an insight into the community structure of the pond and how its composition changes over the seasons.

Ponds undergo a natural succession from open water to dry land at different rates and no one successional stage is more important than any other in ecological terms. When managing a pond, it is best not to eliminate any existing habitats. If a pond is silting up quickly, a silt trap may be a good method of catching stream borne sediment to slow the rate of infilling. The removal of any trees should be carefully considered and the total removal of trees should be avoided as these may well provide pupation sites for insects. Areas of open water should be maintained as they are important for neustonic insects such as Gyrinidae, Hydrometridae and Gerridae.

Problems can arise where a pond is almost covered by tall emergent aquatic plants, in particular Greater reedmace (*Typha latifolia*) which spreads rapidly and forms a dense floating mass. *Typha* is tolerant of domestic pollution and fixes nitrogen which enriches the pond. This could lead to large duckweed carpets which reduce the light



penetration through the water drastically, affecting other aquatic macrophytes. The water may become eutrophicted and oxygen depletion occur: this could have devastating effects upon certain sensitive aquatic macroinvertebrates.

Where possible, nuisance plants should be removed by hand and build up of filamentous algae removed, gently, with a length of wood or garden rake. Bundles of barley straw can be put into the pond to discourage excessive algal growth as they produce anti algal toxins. The source of eutrophication should always be identified. Dredging remains and vegetable remains should be removed from the site. The best time to do any dredging, desilting and vegetation removal is in the autumn before nutrients are released by decaying plants.

Finally, avoid making ponds look the same, there is no such thing as an ideal pond.

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# Wanted – information on the moth *Aetheria* (*Hadena*) *dysodea*

by A. R. Mitchell (1750)

Karoo, Hill Top Lane, Newchurch, Sandown, Isle of Wight PO36 ONU.

I would be most grateful to receive any information members may have on the distribution, status or general information of the moth *Aetheria* (*Habena*) *dysodea*.



# The distribution and status of *Formica exsecta* in Britain

by Jenni Johnstone (9214)

6 Station Road, Cruden Bay, Aberdeenshire, AB42 ONL.

Formica exsecta Nylander, or the Narrow-headed wood ant, is a fairly widespread species occurring across central Europe from central Spain in the west to Mongolia and northern China in the east, from the Appenines in the south to arctic Scandinavia in the north. The related species F. exsectoides is present in North America while the "variety" fukari occurs in Japan. In Britain, however, F. exsecta is threatened and vulnerable. It has a very disjunct distribution surviving in only two main habitats: the lowland heaths in south-west England and the native pinewoods of the Scottish Highlands. Despite a conscious effort to conserve the species and its habitat, F. exsecta populations are declining and disappearing fast especially in England where, it is feared, the ant could become extinct in the pear future

# Identification and description

*F. exsecta* is strikingly different from the other *Formica* species and is easily identifiable in the field by the strongly concave hind margin of the head or the deeply excised petiole. The workers are 4.5-7.5mm in length and are generally reddish in colour with darker colouring on the head and promesonotum and a dark brown gaster. Maxillary palps are six segmented and as long as half the length of the head. The scale is strongly emarginate. The eyes have very distinct erect hairs which are normally present in abundance. Erect hairs are also present on all the gaster tergites, on the clypeus, on the dorsum of the head and sometimes also on the occipital margins. The clypeus is not impressed.

Queens are similar to workers in appearance but normally with a somewhat darker head and promesonotum. The eyes are always distinctly haired. Males are dark, brownish-black with yellowish to brown appendages. Maxillary palps are six segmented. The eyes have distinct but sparsely distributed hairs and the head is broadly emarginate. Queens and males measure 7.5-9.5mm and 6.2-9.0mm in length respectively.

# **Ecology**

This is a very active and aggressive ant; the workers will readily swarm out and bite vigorously if the nest is disturbed. Like most other wood ants they defend an absolute territory which includes their nests and



foraging area and rarely extends beyond ten metres. *E. exsecta* nests are usually found in reasonably open woodland, heathland or rough in the vicinity of shrubs and trees. They are also to be found in woodland rides and clearings, aalongside roads and paths. The nest found at 500 metres at Lairig Ghru in the Cairngorms is probably an exception. In Scotland the ant nests within Caledonian pine woodland.

Nest mounds consist of an earth core covered by a thin thatch comprising heather fragments, pine needles and pieces of dry grass. The nests of *F. exsecta* are smaller than those of *F. rufa* and its allies, and the thatch is composed of finer plant debris. Nests are typically 25cm in height, 30cm in diameter and have a domed or south-facing aspect. Due to the small size of mounds and the consequent reduced capacity for insulation *F. exsecta* must nest in dry, warm exposed situations such as south-facing slopes, amongst *Calluna* or on grass tussocks allowing them to benefit from the direct heat of the sun. A temperature of 22°C can usually be found somewhere in the mound any time from May to October but *F. exsecta* pays for the raised temperature of its nests in that the temperature fluctuates a good deal throughout the year.

*F. exsecta* colonies range in size from 1,000 to 10,000 workers. New queens may start a colony by securing acceptance in nests of *F. lemani* or *F. fusca* or may be accepted back into their parental nests. This leads to nest building and polydomous colonies where the workers of two or more nests will interact amicably; colonies including up to 200 nests have been recorded. This species is mainly aphidicolous, tending aphids on *Juniperus*, *Picea* and other trees. The ant is also predaceous, however, and workers have been found carrying invertebrates such as lepidopterous larvae, bugs (Hemiptera) and spiders back to their nests.

As with other wood ants, *F. exsecta* fulfils an important role within the overall structure of woodlands and heathlands it inhabits including functioning as a highly effective predator. Indeed wood ants have long been used in Europe as a successful means of controlling forest pests particularly lepidopterous larvae.

# Distribution and Status

F. exsecta has a strange distribution in Britain being found at only a few sites in southern England while the majority of its population is confined to the Scottish Highlands. In England this ant has formerly been recorded from the heaths of the New Forest and the adjacent Bournemouth area as far away as Poole, the Lustleigh-Bovey Tracey-Chudleigh area of south Devon, and the Morwenstow area of east Cornwall. Single colonies were also present in Parkhurst Forest on the Isle of Wight. Unconfirmed records include: Lands End, west Cornwall:



Lyme Regis, Dorset; Woking, Surrey; Wyre Forest, Worcestershire; and Midger Wood, west Gloucestershire.

A survey carried out in 1989 showed that out of these, only 33 English colonies remained (44 actual nests). These survived at only four sites in south Devon; Bovey Heathfield, Great Plantation, Chudleigh Knighton Heath and Lustleigh Cleave. Although the latter two sites are SSSIs, none of these sites could be regarded as secure in terms of the ants' future there. Further survey work in the early 1990s revealed there to be 80 nests at Chudleigh Knighton Heath and five at Bovey Heathfield; the latter of which is only just viable. Numerous strong colonies existed in the Bournemouth area in the early part of this century with one still thriving in 1977, yet the recent reports failed to find any remaining colonies at this, or indeed any of *F. exsecta's* other former English sites. The colony on the Isle of Wight became extinct as far back as 1913.

The decline of *F. exsecta* has also been evident in Scotland, although it is not as dramatic. Records in Scotland exist mainly from the mid-Strathspey area including sightings from the Aviemore area, Nethy Bridge, Boat of Garten, Loch Morlich, Abernethy Forest, Carrbridge, Glenmore Forest and one further site at Lairig Ghru in the Cairngorms. Further reports are known for Rannoch in mid-Perthshire, Amat Forest, East Ross, Plodda Falls in Easterness and one unconfirmed report for Braemar. F. exsecta has been lost from a number of these sites with a concentration of colonies now existing in and around the forests of Abernethy and Glenmore. Recent work in these areas has put the number of Scottish nests at around 300, which is encouraging since previous estimates were well below this. However, there is no room for complacency. F. exsecta is on the priority list of globally threatened species and is listed as endangered on the GB red list; "endangered" being defined as "taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction".

# **Threats**

Like so many other species, *F. exsecta* has suffered because of the loss and fragmentation of its habitat. The loss of suitable heath-land/woodland has been through agriculture, urban development and inappropriate management. For example, natural and semi-natural woodland has been progressively lost to intense forestry while heathland has been intensively managed for game birds or red deer. Both create a dense single-aged monoculture, which is totally unsuitable for this species. Nutrient enrichment of soils and the development of grass swath have also contributed to a loss of habitat.



One widespread threat to *F. exsecta* nests is the encroachment of scrub, trees or bracken (*Pteridium aquilinum*). Although the presence of isolated shrubs or trees appears to suit this species (presumably as sources of aphids and/or prey items of food), the invasion of dense birch (*Betula pendula*), bracken, pine (*Pinus* spp.) or grasses such as *Molinia caerulea* is detrimental since this leads to the shading out of *F. exsecta* nests and the encouragement of competitive species for whom shaded conditions are more favourable. Strong populations of *F. rufa*, encouraged through the encroachment of scrub and trees onto heathland, commonly over-run *F. exsecta* nests. Other ant species such as *F. sanguinea* may also be a threat south of the border where the ranges of the two species overlap, but there is no evidence that *F. sanguinea* or any of the northern wood ants displace *F. exsecta* in the Scottish Highlands where they frequently coexist.

Fires, whether accidental or associated with heathland management, could be extremely harmful to this species at its remaining sites. Indeed, a massive fire in the Bovey district during 1921 appears to have reduced its south Devon population significantly. However, it could be speculated that in areas not already inhabited by *F. exsecta*, fires could prove beneficial for the ant in that it is commonly a pioneer species: invading forest clearings and new or young patches of woodland.

Existing threats to *F. exsecta* include motorcycle scrambling at Bovey Heathfield while other threats in south Devon include widespread clay quarrying and associated spoil tipping. Excessive grazing and inadequate browsing by inappropriate species of ponies was the likely cause of the extinction of the New Forest population, whereas in Scotland habitat has been lost to intensive forestry and improved pasture. Throughout its range, suitable habitats for *F. exsecta* have not only been lost, but also fragmented. This has serious consequences in terms of the loss of genetic fitness in isolated populations. Indeed, the current population at Bovey Heathfield is considered to be only just viable genetically.

# Current action and the future

So what is the future for *F. exsecta* and what is currently being done to save it? Before drawing up any kind of species management plan it is essential that the species concerned has been properly researched and that its needs and requirements have been properly understood, therefore most current action has focussed on survey work in Devon and in Scotland.

In 1993 Exeter University prepared a report for WWF on the distribution, ecology and status of *F. exsecta* in Devon. Management plans have been prepared for both Bovey Heathfield and Chudleigh



Knighton Heath; the latter of which has been successfully implemented. Surveys are currently being carried out on the Devon sites and also in the forests of Abernethy and Glenmore in Scotland where the estimated number of nests has risen from 80 to over 300. Another recent move has been the translocation of one colony from Bovey Heathfield to Paignton Zoo. The nest was within inches of the motorcycle-scrambling track and it was feared that it would not survive. It is hoped that the colony will be used for a captive-breeding programme so that in the future *F. exsecta* can be re-introduced to areas where it was formerly present. The most recent research and survey work in Scotland has focussed on the establishment of habitat requirements, the specific threats facing the ant in each area, the characteristics of the nests themselves and the surrounding vegetation, and foraging behaviour.

Several targets have been set to encourage the understanding and conservation of this species. Firstly, it is aimed that by the year 2000, survey work will have confirmed the existing distribution of *F. exsecta* in Britain. The populations in Devon and Glenmore, representing the most important and densely populated sites, will be maintained and encouraged through appropriate management. The previous and present attempt at translocating and artificially breeding a colony will be built on and developed so that more colonies can be saved in this way if necessary. Finally, using these captive-bred colonies, it is hoped that ten self-sustaining populations might be re-established in appropriate locations in Dorset or the New Forest by 2005.

Just how these objectives will be achieved is a matter for the many individuals involved with this project and a number of organisations namely: EN (English Nature), SNH (Scottish Natural Heritage), FE (Forest Enterprise) and WWF (World Wildlife Fund). In order to establish the distribution of F. exsecta in Britain it will be necessary to survey all previous and existing sites. This information can then be used to assess the current status of the ant as well as being passed on to international organisations who are monitoring species on a global level. Constant monitoring of present F. exsecta sites should be encouraged and the future threats identified. Research should be promoted at all levels to ascertain aspects of the ants' ecology such as its habitat requirements, colony structure and formation, genetic variation, competition with other ant species and foraging behaviour. This knowledge can be used to secure favourable and appropriate management at existing sites by ensuring that site owners are aware of F. exsecta's habitat requirements and protecting the area from potentially damaging activities. Additional research needs to be developed in the areas of artificial breeding and translocation techniques so that nests can be moved as a last resort if



threatened. Artificial rearing can be used to produce colonies for reintroduction once suitable sites have been identified.

Great concern has been expressed over the decline of *Formica exsecta* in Britain. This species is particularly susceptible to human interference and has therefore suffered as a result of fires, habitat destruction and fragmentation, and urban development. We must seek to preserve and extend where possible, the habitat of this rare wood ant whilst continuing research and monitoring programmes to ensure that this species can be properly understood and protected.

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# The Hunter Gatherers

Mrs Andree Davies and Penny

8 Gardens Road, Bebington, Wirral, Merseyside L63 7QZ.

Penny the Basset Hound and me, We live with an Entomologist you see, We do our best to help our man, But the work is hard, we do what we can, He goes abroad for a business meet, Penny and me provide the eats,

We are the authorities on lush food plants, We wander the Wirral, we puff and pant,

Local authorities on privet uncut, nettles, fennel, eucalyptus, and such,

With gloves and scissors, plastic bag, on very wet days, its such a drag,

Our man arrives home, to inspect his brood,

They sit there all fat, lively and clean,

Doesn't think to ask us how we have been,

Penny and me work never done, carry on hunting till the pupae come, How many like us go unsung, experts we're not but a job well done!!!!



# Hilltopping in France and Kenya - Summer 1999

by John Woolmer (7193)

The Rectory, Peter Street, Shepton Mallet, Somerset BA4 5BL.

Visiting friends in the valley of the Lot in south-west France, we were taken to view a restored windmill – inevitable on a hilltop. The windmill was surrounded by a substantial field of ripening corn. I was surprised to find the corner of the field (the highest) near the windmill full of *Papilio machaon* (French swallowtail) and *Papilio iphiclides* (Scarce swallowtail). Male swallowtails could be seen perching on prominent ears of corn, and many pairs could be seen spiralling in the sky. I could count about twenty butterflies at any one time (many *machaon*) and guess that there were many more mating in the field. The time was late afternoon c.16:00h. Both swallowtails were reasonable common in the surrounding area, but I never saw more than one at a time.

A few days later, I observed *iphiclides* using her feet to search out small fresh sloe bushes on which to lay her eggs. The distinctive fluttering flight alerted me to her intention, and we watched a large female lay several eggs on different bushes.

The rest of our holiday was spent in the foothills of the Pyrenees above Pau. Butterflies were scarce, a likely looking forest (not unlike Bernwood, near Oxford) was all but totally devoid of butterflies, and I wondered why. We did find a colony of Large blues on a rough hillside. It was a very dull, wet day, but a number of very large female *arion* were flying, and I would have liked to have seen the colony on a fine day.

Just above our holiday residence in a very small village, was another small hill. We climbed this one evening and found some tall oak and other trees. It was about 15:00h. I was very surprised to see at least three, possibly four, *Apatura iris* (Purple emperor) in the trees. Two were obviously in courtship flight, the other more sedentary, resting near the tops of tall bushes. There was no sallow in the immediate vicinity, but we observed large clumps about half a kilometre away down the hillside. Purple emperors were clearly using the top of the hill to meet, just like the Swallowtails in the cornfield.

A few weeks later, at the end of an overseas mission, I visited the splendid Kakamega Forest in West Kenya. Here I was taken to the "viewpoint" a small, flat-topped hill at a height of about 1850 metres above the forest canopy. Here *Papilio rex* (the Regal swallowtail, probably Kenya's finest), and the *Charaxes castor* (Giant charaxes) were in evidence. The *Charaxes* flew very fast, occasionally resting on bare bushes, rather similar to the *Arbutus* that *Charaxes jasius* use in



southern France. I photographed two in close proximity resting, touching, presumably part of their courtship ritual. It was quite dramatic to see the *Charaxes* pursuing swallows and driving them off the hillside! *Papilio rex*, a wonderful reddish swallowtail, flew much slower and was obviously pursuing different courtship tactics. I caught one of these magnificent insects, and tried to photograph it after releasing it in the shade – I was unsuccessful, and the next day the weather was less bright and only the *Charaxes* were to be seen.

I gathered from our excellent guide (an expert on plants, monkeys, trees, birds and snakes) that various other butterflies use this hilltop as a meeting place.

As I've seldom witnessed "hilltopping" before, it seemed quite a remarkable series of sightings. At Kakamega I also observed one Painted lady, possibly on the same course of intent.

# **Greenfly Problems**

by Nick Holford (3804)

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In the past, whenever greenfly appeared in my greenhouse (used for growing tomatoes, cucumbers etc.) I would spray with Malathion and get immediate control. It would also minimise the whitefly numbers at the same time. I could do it safely because I do not use the whitefly parasite as a measure for control. Also, Malathion has a track record of being safe (if any pesticide may be considered as being safe) for humans, unless the individual has previously been in contact with Parathion, when it can be a problem.

However, this year for the first time, I have noticed that at normal concentrations Malathion was ineffectual against the greenfly (though still effective against whitefly). This has also been noticed by another member who lives in Sheffield. This is interesting as I live in Horsham, West Sussex so we are more or less at opposite ends of the country. Eventually I found that a quadruple concentration of Malathion had an effect, though it was not as thorough as in the past. Also, I do not like to use a pesticide at such a considerably higher concentration.

I am curious to know if others have experienced a similar effect, or have found Malathion to be still effective against greenfly. If members could write to me at above address describing their observations I would be very grateful. Alternatively, a note to the *Bulletin* would suffice. If I get suitable responses, I will write up a summary for publication in the *Bulletin* in the future.



# The Western Algarve revisited – March/April 1999

by Don Dunkin (1487)

11, Blakes Avenue, New Malden, Surrey.

In the June 1993 edition of the Bulletin Volume 52 (388). I talked about the butterflies and other creatures to be seen during late November and early December 1992 in that beautiful coastal strip of south Portugal stretching from the west of Lagos, from Praia Dona Ana to the Praia de Luz. A purpose of this article was also to draw attention to the projected sale of land in this unique part of Europe where nature had seen fit to provide an almost sub-tropical climate together with a number of very special forms of wildlife. The threat of increased tourism which seemed likely to follow the sale of land also seemed to me to pose a serious threat to this part of the world: a short term gain against a life long loss perhaps! My concern was sufficient to prompt me to write to a senior figure in the Portuguese Government of the day to draw attention to the potential problems, and especially the threat to the beautiful but already endangered butterfly, the Aetherie fritillary (Melitaea aetherie aetherie). My letter was received courteously as is the Portuguese way! The AES paper attracted attention from a number of conservationists who share with me a love of Portugal, its people, culture and wildlife.

In 1999, during the period 27th March to 15th April, my wife and I decided to revisit the Algarve to see for ourselves how matters had progressed. Our first visit to the Algarve was (many years ago) to the area about the fishing village of Alvor. This visit enchanted us and we have since visited many parts of Portugal many times. Alvor and the surrounding area is now just a tourist spot with hotels and restaurants everywhere (although fishing is still a source of income). New developments still take place however and the strip of rich south-facing grassy meadow-like land bordering the beach has gone forever. A solitary Speckled wood (*Pararge aegeria aegeria*) and a Small white (*Artogeia rapae*) were noted during a thankfully brief visit. However, the attractive silver blue form of the Common blue (*Polyommatus icarus*) photographed in 1986, as well as other species noted previously, are almost certainly lost to the area.

Our main purpose in 1999 was to see the area west of Lagos, to spend three weeks to explore old haunts, see how the wildlife and flowers had fared and to meet old Portuguese friends to again enjoy the excellent Portuguese cuisine. What did the visit reveal? The land parceled up for sale had been sold and developed; work was still taking place here and there. A ribbon of new buildings seemed to



stretch from the Praia de Luz all the way to the beautiful town of Lagos. A hotch-potch of white villas in a variety of styles designed not to blend very successfully with the beauty of the Western Algarve and seemingly just splashed upon the land! At Porto do Mos, a new complex of very expensive villas reached towards the sea (leaving just a metre or so of ground for explorers to pass along the cliff-top between Lagos and Luz in one place). New, featureless streets of villas offered scope for walkers to get lost - which my wife and I soon experienced in our attempt to avoid cliff-top walk dangers. I was pleased to learn from Portuguese friends, that the Portuguese authorities now limit the height of new buildings, a past problem in some areas such as Luz. Much more importantly, new constructions within 700 metres of this part of the coast are now prohibited although the rules seem to allow for the redevelopment of existing properties. Building constraints are vital to the preservation of what remains of the wildlife and the authorities need to be supported most strongly in their initiatives!

Tourism has increased significantly; there is more employment in the Service Industries it seems, although some local people at least are hostile to the changes made. Walks about the cliff tops revealed that the Cattle egret (*Bubulcus ibis*) still survives (although the odd weekend motorcyclist seem to delight in chasing them about their feeding grounds as well as stirring up the dust from paths to the annoyance of tourists). The Bee-eater (*Merops apiaster*) was also seen although not in their old haunts. And the local authorities have taken steps to reduce damage to the cliff-top walks and flowers from visiting vehicles. Damage from extremes in climate could be seen in various places – erosion by the winter floods of three or four years ago, with very dry winters such as in 1998 9 which seems to have affected plant life adversely. Paths are very difficult for the unwary in places! Thanks to the efforts of the Portuguese authorities, cliff top butterflies in the area west of Lagos to Luz seem to have coped well.

Against comparable time periods of previous years, the following butterflies were not recorded this time:

Aetherie fritillary (Melitaea aetherie aetherie).

The buildings reaching to the sea, immediately to the east of Porto do Mos probably now prevent the territorial extension of this species. Seen as early as 2nd April in 1987 and as late as 27th April in 1990 but weather conditions (high winds from 13th April) were perhaps the reason for lack of sightings

Spanish festoon (Zerynthia rumina).

Not seen since 13th April 1987.



False baton blue (Philotes abencerragus).

Could be Panoptes blue (*P. panoptes*). A female photographed 13th April 1987, upper and underside but still very difficult to be sure which of the two species!

Species seen previously and recorded again in 1999.

Scarce swallowtail (Iphiclides podalirius).

One worn specimen only - a casualty from food plant loss?

Swallowtail (Papilio machaon).

Common and widespread.

Small white (*Artogeia rapae*). Common everywhere.

Large white (Pieris brassicae).

Common near gardens.

Green-striped white (*Eucloe belemia*). Widespread.

Clouded yellow (Colias crocea).

Very common, with odd examples of form belice.

Small copper (Lycaena phleas).

A few in sheltered warm spots.

Brown argus (Aricia agestis).

One only on 1st April: worn.

Common blue (*Polyommatus icarus*). In sheltered spots, widespread.

Painted lady (Cynthia cardui).

Much less common.

Marsh fritillary (Eurodryas aurinia).

Widespread in hot sheltered areas along the cliffs. Some brightly marked but cannot confirm identical with *E. desfontainii* (despite many photographs).

Spanish marbled white (*Melanargia ines*). Widespread.

Speckled Wood (*Pararge aegeria aegeria*). In suitable spots.

Wall brown (*Lasiommata megera*). Local, hot sheltered spots.

Mallow skipper (*Carcharodus alceae*). Frequent, hard to spot.

Species newly recorded in 1999.

Holly blue (Celastrina argiolus).

A worn female, hotel grounds 6th April.

Black-eyed blue (Glaucopsyche melanops).

Photographed 30th March, seen again 13th April. Post discal spots on underside forewing, large, specimen photographed seems to be more like *G.m. melanops* and not the *G.m. algirica* photographed in north Portugal.



# Conclusions

I remain concerned about the Aetherie fritillary and would be interested to learn that it survives. It was pleasing to see that despite the regrettable land sales of the early 90s, much is still to be seen of the butterflies and flowers which make this part of the world so special.



# The Amazing World of Stick and Leaf-insects

by Paul D. Brock. The Amateur Entomologist Volume 26, 1999. Hardback, A5, 168 pages. £14.75, including P&P to UK address, £16.20 to overseas address.

This is an excellent new book by a world-renowned Phasmid expert. This book provides a more comprehensive account of stick and leaf-insects than any other book before this. Coverage in Part I includes anatomy, classification, publications, geographical distribution, courtship and mating as well as a novel collection of Phasmid records with the largest, shortest, heaviest, largest eggs, most dangerous, most threatened and most common as well as others.

Part II deals with other topics including collecting and preservation tips as well as important breeding notes for the enthusiasts. Advice on taxonomic studies as well as review of the various important Phasmid collections around the world completes the section.

Part III outlines the important species from around the world. Interesting species from the Palaearctic. Afrotropical. Nearctic. Neotropical. Oriental. Australian and New Zealand as well as fossil stick insects are included. The appendices contain a comprehensive list of glossary of terms used for Phasmids and is essential for anyone starting with these insects.

The book indeed is amazing and an essential reference for anyone with even the slightest interest in stick and leaf-insects. The price is reasonable considering the content and number of colour reproductions. Nonetheless, some of the illustrations and colour reproductions are of poor quality but this should not distract from the real value of the book.

I know that everyone with an interest in natural history will want a copy for themselves.





# Hoverflies of Surrey

by Roger K.A. Morris, published by Surrey Wildlife Trust, 244pp, 16 colour plates, distribution map for each species. £15. This atlas is the fourth in a series covering the invertebrates to be produced by the Surrey Wildlife Trust.

The book starts with a long and interesting introduction which revues the geology and geography of Surrey, including its position, underlying rock, soil types and levels of urbanisation. Each major habitat type found in the county is discussed. There is a map showing its distribution and a list of hoverfly species likely to be encountered there, which will be useful for the novice visiting a new site. The author also makes the point that some species, notably predators, show little habitat preference. For others, such as *Pocota personata* (Harris), which has larvae that live in rot holes in trees, it is the microhabitat, which is much more important. Hoverfly larvae have a very wide range of life styles. Some are vegetarians feeding on leaves, roots, internally in bulbs, in rotting wood and on fungi. Many are predators, feeding on ant larvae, aphids, moth and beetle larvae, others feed on dung and possibly even carrion. Such diversity of habit means that the dipterist has to be looking in many places when recording species. There is a short account of a number of interesting and varied Surrey sites, followed by a brief history of recording and the techniques which are used

The species accounts carry a host of information. Each of the 209 species recorded in Surrey has a distribution map and at least half a page of text. The number of records is given, together with the status, flight period, peak emergence time and visits made to flowers. For rarer species individual records are listed. The text adds further relevant information and is always helpful and succinct. The sixteen plates are superb; they are composed of four or five pictures each and are a good mixture of adult insects, habitats and early stages. There are seven appendices including an extensive bibliography and a list of flowers visited by named hoverfly species. Mistakes are rare and in no way detract from the value of the book. The cover illustration suffers from a simple typo and should read Episyrphus balteatus, and the computer origins of the manuscript show through in the entry for Xanthandrus comtus (Harris) where on one line the font information has been lost. This excellent book is packed with information. No entomologist, from Surrey or elsewhere, should be without it.





# The Butterflies of Venezuela (Part 1): Nymphalidae 1 (Limenitidinae, Apaturinae & Charaxinae)

by Andrew Neild, colour plates by Bernard D'Abrera. Hardback 310x220mm, 274 species, 144pp., 32 colour plates of nearly 1200 specimens, 18 figs., 4 maps. Price £75, published by Meridian Publications (ISBN 0 9527657 0 5). Part 1 of a series of 4.

With several holiday companies offering wildlife trips flying direct from Heathrow, Venezuela is one of South America's most accessible countries and should be high on any lepidopterist's list of places to visit. It is a vast country with every terrain from lowland tropical rainforest in the east to high alpine tundra in the Andes tó the west – this range of habitats has created a bewildering diversity of species (approximately 2400!).

Anyone who is interested in the butterflies of the Neotropics will, no doubt, be familiar with the seven volume series of books by Bernard D'Abrera and might be wondering why they should go to the expense of buying *The Butterflies of Venezuela*. The answer here lies in the text, which is based on seven years of research in the field, in collections, and in libraries. Each genus is discussed and each species has information on distribution, identification, behaviour, habitat and food plants (where known). Also, it may seem mundane comment, but there has been great attention paid to the layout of the text and choice of fonts. This is important because good readability ensures that you can find information quickly.

In the plates the author has chosen to show "half butterflies" (body to the left and wings to the right) and, although this may not look as "artistic" as a complete butterfly, it makes comparison of closely related species much easier. The plates show every species and where variations exist each sex and principal form has been shown. The quality of the plates is of a very high standard, as you would expect from Bernard D'Abrera.

I think this would be a very valuable addition to the library of anyone interested in Neotropical butterflies and essential reading for any lepidopterist intending to visit Venezuela or neighbouring countries. It is aimed fairly and squarely at the reader who wants to identify butterflies and learn more about their ecology and I feel it is this wealth of textual information, more than any other factor, which really attracted me to the book.



This work must have been an immense undertaking and in it Andrew Neild's passion for butterflies really shines through. With the next volume expected some time in 1999, we have a lot to look forward to.

Chris Raper (7540)

Anyone with access to an internet connection can see selected excerpts from this book on Andrew Neild's web-site at http://www.ndirect.co.uk/~a.neild and he can be contacted by email at a.neild@ndirect.co.uk

### A rare surprise

by Sharon Flint (10425)

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The 29th October 1996, a lovely day as I remember it, except that the wasps (*Vespula vulgaris* (L.)) were still getting into the bathroom through a small hole in the ceiling next to the light switch. Then I noticed *it* on the bathroom curtain – I approached slowly and carefully removed it. I took it to my study; it was alive but I could not say what it was at all, except, yes, it was definitely a beetle.

No ordinary beetle as it turned out. *Metoecus paradoxus* L., the sole British representative of the family Rhipiphoridae. Something rarely seen and only then by the most determined of entomologists. I looked it up in Cooter for ecological information and yes, there it was, though my specimen, being a female, did not have the feathery antennae of the illustration. A parasitoid of social wasps (Hymenoptera: Vespidae) the adults are found, rarely, in the autumn, so I was very lucky to see it. Usually one would have to search through a wasps' nest, after first killing the wasps!

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### A Robber fly (Diptera: Asilidae) habitat in Chollabuk Province, South Korea

by Charles Young (11662)

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Robber flies (Asilidae) belong to that huge group of insects, the Diptera, or true two-winged flies. Outfitted with large spiny legs, Robber flies capture and manipulate their prey with a long, knife-like hypopharynx, impaling and sucking dry their victims. The Asilidae family includes approximately 6,727 species worldwide.

Robber flies are ecologically interesting in that their habitats are elusive and stenotopic. Asilids are found in isolated pockets with no Robber fly activity beyond their borders. "The majority of species of Asilidae frequent dry and sandy areas, a condition well shown by the greater number of species found in arid and semi-arid regions; but even in the desert or semi-desert country the small drains of dry stream beds attract the greatest number, and sometimes the entire Robber fly population of a region will be restricted to such areas, which also have the maximum vegetation and the greatest population of insects upon which the flies feed. In such country one may look in vain for Asilidae beyond the banks of the stream bed." (Hull 1962). Although many Asilids are found in hot dry areas, temperate regions have their own rich fauna. South Korea demonstrates this with fertile Asilid populations.

Chollabuk Province lies on the peninsula's west coast bordering the Yellow Sea on one side, and Kyongsangnam Province on the other. This area is in the middle of the Korean headland, halfway south of Seoul and halfway north of the Mokpo seaport. The province is covered with tracts of rice paddies broken up by hills and mountains covered with both coniferous and deciduous trees and shrubs.

The hills are Robber fly oases, with Asilid activity flourishing in openings on the slopes. The surrounding rice paddies cannot support Asilids with the fields flooded in water six months of the year (Asilid larvae are terrestrial), and pesticides periodically sprayed on the growing rice. The most productive areas are open clearings that dot the slopes. These glades are created by the Korean custom of burying their dead in isolated areas. Hillsides across the country are choice areas for Korea's Buddhist population to create grave sites: clearings consisting of a semi-circular trench dug out of the earth, with a raised mound of soil between three to five feet high in the centre. Completing the grave is a headstone at the apex of the semi-circle. The heat loving Asilids benefit from these areas as the choice spots are on south-facing slopes.



The burial sites are enhanced by dead wood, a shrub layer on their perimeters and a canopy of pine trees beyond. The clearings have a ground and field layer of herbaceous plants that attract Asilid prey.

One rich Robber fly site is located just north of Kunsan City, the Umpa Lake area. The lake is roughly one square kilometre with the shoreline on the west side with no projections as it curves eastward. The east side contrasts with three peninsulas, on one of which a burial site surrounded by a young pine forest is found. Along the higher ground in the centre of the peninsula, the pine canopy gives way to an open narrow strip of burial mounds that follow the cape down to the water's edge. The ground and field layers consist of grasses varying in height of one to three feet, with low trimmed shrubs, and patches of bare earth. The prevailing vegetation is plants from the roses, clovers, madders, carrots, lilies, moonseeds, carpet-weeds, sandalwoods and figworts. On the clearing's edges, abutting the pine forest, are oak saplings, taller ferns, locust and sumac shrubs.

The first Asilids of the season to inhabit this area in mid-May are the medium sized, 19 to 60mm, brown Robber flies of the genus *Neomoctherus*. These were camouflaged by blending in with the brown layer of decaying pine needles that cover the ground. With the temperature at 28°C, these flies became active, hunting and mating on low grass stalks. A mating female clung to a patch of crown-vetch as it fed on a beetle (Coleoptera), the male hanging downwards in the opposite direction in a tail-to-tail position. Cannibalism was common. These Asilids were inconspicuous as they are low fliers with short capture darts, and they blend in well with their surroundings.

The medium-sized *Cophinopoda chinensis* (Fabricius, 1794) appear later in mid-June, in the middle of the clearing, among the taller grasses. These flies measured between 19 to 25mm, the females being the larger. The abdomen and thorax are light brown with blond pile covering the abdomen; the mystax is long, with thick reddish blond hair. A striking characteristic of these flies is their green and red iridescent eyes. These Asilids were netted while they rested in an upright position on single stalked grasses, two to three feet high. Mating pairs were positioned on tall weeds. These flies were strictly confined to the middle, open ground of the field and were absent from the more densely vegetated perimeters of the clearing.

Also present on the open ground were *Promachus yesonicus* (Bigot, 1887). On and around the burial mounds, they were landing and foraging from patches of earth, rocks, stone walls and gravestones. Their heavy flight made them conspicuous but they were not unwary



flies. They measured between 23 to 30mm. The females were the largest, with short black and velvet pile covering the abdomen interrupted by bands of longer yellowish hair circling the apical end of the tergites. Both males and females appear in mid-June. On five of the females collected, red mites (Acari: Acariforms) were attached, mostly on the legs but also in the mystax area of the face. These Asilids were feeding on Hymenoptera and Coleoptera.

Numerous *Machimus aurulentus* (Becker, 1925) were found in the perimeters of the clearing in the fringe of shrubs and grasses backed by pines. They were foraging from short stalks, about one foot high, mostly in the shade, their yellow thorax and abdomen blending in with the vegetation. These flies were more active in the cooler morning with the temperatures at 29°C. Two of these Asilids were feeding on small moths (Microlepidoptera) that were flying into the clearing from the shaded pine canopy.

Light brown Asilids, *Eutolmus brevistylus* (Coquillett, 1899) measuring between 22 to 25mm, were active early in the morning to late afternoon. Most of their mating and foraging took place in the hottest hours of the day, between midday and 2pm, with the temperature at 29°C. These Robber flies were more numerous than any other species in the area, and cannibalism was observed on many occasions. They were also feeding on a smaller species of Asilid, small moths and hymenopterans. These Asilids were hunting from individual twigs and stalks of grasses, one to three feet in height. Some were netted as they rested on bare patches of ground. Their mating position was tail-to-tail.

In addition, small species of *Neoitamus* spp. were common in the area. These Robber flies, measuring 19 to 20mm, were found on the perimeters of the clearing as well as in the open areas of weeds and burial mounds.

The Umpa Lake area is typical of Korean burial sites that dot the hills in Chollabuk Province. The Robber flies mentioned were not found beyond their confines, and these sites had a wide diversity of Asilids. "Sometimes small neglected corners of the otherwise uniform woods may hold a great diversity of species concentrated in one spot. Those woods which retain something of a semi-natural condition are likely to be the most productive, particularly where there is a diversity of trees and good ground flora. The trees should preferably be of differing ages and including a portion of partly decayed trees and dead wood; the presence of rides or clearings will also greatly increase the variety of niches." (Chandler 1978). Finding these pockets of activity enhances the understanding of asilid ecology and biology.



#### **Buprestids in Menorca**

by Maurice J. Pledger (10214)

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Our family holiday this year saw us spending the last two weeks of July out at Cala n' Bosch on the west coast of Menorca. Not being one to sit out in the sun I spent most of my time out and about with my net and pots, seeing what I could find in the limited time available. On arriving it didn't take me long to realise that flower-wise at any rate, we were miles too late in the season. Most of the island's flowers had been and gone. Most of what was left was all dried up or gone to seed. There's a joke in there going begging, but I'd better leave it well alone. The flower situation was a shame really as I'd set my heart on seeing, or at least trying to find, some native *Buprestid* beetles.

I've slowly been falling in love with these beetles over the last couple of years, and most of my time over the past two summers has been spent searching for, and learning about, the English species. I've done well with the *Agrilus*, finding five species so far, all of them from the Broxbourne area in Hertfordshire. Prior to going I envisaged searching among lots of brightly coloured flowers, especially yellow ones, which apparently some of the Buprestid species visit. No such luck. What was yellow had been and gone. *Oleanders* and *Hibiscus* were out in force but to be honest, these never seem to pull in much of anything. A few bees and wasps but not much else.

At night I'd go out with a torch looking for ground and dung beetles and found quite a few species including the large Cellar beetle which was all over the place. During the day I went everywhere I could within close range of wherever we happened to be staying. The Tiger beetles on the beach at La Vall were great fun. Anyway, back to the Buprestids. Funnily enough, on the second night I had the most impossible piece of luck on returning to the apartment. Literally on the wall leading up to our room I noticed a large beetle just sitting there in plain view. I dare say anyone else would have squashed it. Joy of joys, you can imagine my delight, a wonderful large specimen of Chalcophora mariana, albeit with a damaged antenna. Although the setting and the nature of its capture were totally out of the blue, it at least told me that this species was at large on the island. Next step was to try and track it down. My books said it was a pine-dwelling beetle, so with that in mind I went walkabout looking around any pine trees I could find. Thankfully there were quite a few dotted around but sadly no beetles. I took it they were day-flying as most Buprestids are.



Anyway, a chance discovery put me on the right track. While nosing round some waste ground I found an old pine stump, still standing but long-dead, absolutely pitted with large emergence holes. I broke off chunks, inside was honeycombed with larval borings and full of dusty powder. This suggested to me that the inhabitants had long gone, God knows how many years ago. How wrong I was. I crossed the road to some pine trees which had been set aside as a natural area between the hotels and apartments. I found an old stump and kicked it over. Breaking chunks off was easy as most of it had gone to powder. I found two or three peculiar-shaped Buprestid larvae about an inch long. I took them back and potted them up in sections of wood. At this stage I was still unsure if they were larvae of *C. mariana* but at least they were Buprestids, and I put it down as a great success.

It wasn't until I stumbled onto a wild scrubby area close by on the outskirts of Cala n' Bosch, that I really put the pieces together. There, dotted amongst many pine trees I found lots of old stumps which had been left after someone had gone mad with a chain-saw. The actual trees themselves in many cases, were just left beside the stumps drying up in the hot sun. Providing the stumps were pretty old (how old I don't know), I managed to kick them over, most of them tearing out just below ground-level in a cloud of red dust. First I'd break away the outer bark, where you could see larval tunnels, pupal chambers and exit holes galore. Twice I found full-grown larvae, and various pupae in all stages of development. Some were still pure creamy-white with all the features of the beetle beginning to show, others had started to harden and take on the appearance of the shiny adult beetle. In several instances I found the fully-formed adult, just waiting to emerge. Also, I found a few adult beetles which had died in the pupal chamber, not managing to emerge. Newer, harder stumps showed little sign of infestation, if at all. The older, more brittle ones which could be kicked over with one swipe, were absolutely riddled with tunnelling. It was in these I found the larvae, pupae and live adults.

I haven't found any literature so far which says how long the larval stage is with this beetle, but I would imagine it's quite a while. I can't imagine there's too much goodness in wood that powdery, but then perhaps they went in when the stump was younger. At a guess, I don't know, two or three years? But then most of my Buprestid hunting is based on guesswork.

While all this was going on I noticed a few real cruise-missile type beetles whirring through the trees like bullets. These I think may have been *C. mariana*, but you would have had to be immensely lucky to



net one, as they tended to fly around about ten to twenty feet high. There was no way of chasing them at all with all the sharp and spiky undergrowth beneath the pines and shrubs. My only hope was to see one alight somewhere on a low-lying branch, but I never did. Well actually I did, but I scared it to bits when I went crashing after it.

In amongst all my clattering around, kicking over stumps, tearing myself to bits in the undergrowth, and ripping off bark in great red dust clouds, I had another mind-bending piece of luck.

After having just got up from one of my stump sessions, I was just stretching my aching back and spitting out bits of wood chip, when this amazing beetle just flew in and settled on a low shrub, right in front of my nose. Not daring to move I was in two minds of either potting it directly from the leaves, or giving it an almighty sweep with my net. Deciding it was pottable, I fumbled for a pot and placed it below the beetle. Luckily, true to their nature, this one tucked all its legs in. feigned death and fell into the pot with a loud chink. I would say it was probably the most beautiful beetle I have ever seen – 15mm long, shiny blue-black with a multitude of almost fluorescent yellow spots all over, both above and below, this was truly a Buprestid to end them all. I kind of recognised it and guessed at a name (funnily enough I was right), the pictures in my books didn't do it justice. Anyway, if anyone wants to see the most beautiful specimen of Buprestis octoguttata in the whole wide world, then I have it here. Absolutely stunning. I almost wore it out just looking at it. Half an hour later I chased down and potted another one.

This one led me a real dance, They appeared from nowhere, usually in the clearer areas between the pine trees, which in effect were sun traps. I looked round the open scrubland on the perimeter of the pines but saw none. They seemed to prefer the confinement of the trees but only in the sunny openings, flying about ten or twelve feet off the ground, elytra fully extended like flying longhorn beetles. Now and again they'd settle, usually on a sprig of pine needles or a tall shrub. Again, they'd become very wary if you got too close, shuffling around the stem of where they were sitting, then ultimately feigning death, dropping into the pot. Over the period of a week, every day I'd return to this area for at least three sessions of one and a half hours or more. and in total I saw six and potted four. I think I worked it out at about six hours per beetle in the end. Literature states pine as their foodplant, and again only on old felled trees did I find any amount of holes on the branches and twigs. These exit holes were much smaller suggesting perhaps a beetle this size. Again, the older and more bleached and



snappy the branches became, the more exit holes and tunnelling were evident. Younger felled trees had no infestations at all, nor did any standing dead trees. It seems that whatever went in, went in after the trees were felled, and then perhaps a while after they were lying on the ground. Again, I'm only guessing from what I saw. I've brought a few sections back in the hope something comes out.

Lastly, on a sweltering hot day in the dusty car park at La Vall, we were all getting back into the car when I noticed a small Buprestid-looking beetle walking to and fro on a small twig of pine on a tiny sapling. To cut a long story short, and with a lot of perching on wooden stumps and bending of the sapling, I just managed to pot the tiny beetle. At only 8mm long my daughter Laura was actually amazed that I even managed to see it. Which is probably the only time she's ever been impressed at anything I've ever done. It was only on returning home and a session with the microscope, that I narrowed down the possibility of what it was. I think I've finally settled on *Chrysobothris solieri*. At 8mm it seems it's a shade too small to be *C. chrysostigma*, but the notched femora on the front legs tends to narrow down the choice somewhat. A lovely little beetle.

So all in all, three new species of Buprestids and a lot learned in the process of tracking them down. A lot more rewarding than laying around baking under a hot sun all day, well to me anyway. If anyone has any news or ideas regarding my ramblings, please feel free to contact me, it's always nice to learn more about these fascinating beetles.

### Chamomile shark in Glasgow

by Frank McCann (6291)

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I first came across the Chamomile shark larvae at the Royston Road area of Glasgow which is situated about one mile north-east of the city centre. This area comprises rough grassy slopes and mounds with various wild plants including a lot of Chamomile and related plants. I don't know how long the Chamomile shark moth has been in this area but I would reckon it would be a good number of years and maybe has gone by unnoticed.



### Flogging a dead dodo

by Leigh Plester (2968)

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Thank goodness for laptops (small computers, Luigi, old son). "On the evening of 19 December, some Italian kids invaded our swimming pool with gutteral shrieks of joy," records my electronic girlfriend, "and the frogs are very noisy in the evening from half past seven onwards in the culverts next to the wasteland beside our citadel. No crickets sing. Spent a quiet evening in the house. Largest spider yet, plus some small brown beetles are flying." (Author's note: Has this fellow discovered a flying spider, or what?) "One black chafer in the swimming pool. Two brown ones. A grasshopper. The larger cockroaches tend to be found dead on our tiled floor in the morning, surrounded by an inquisitive band of pharaoh ants. When the lights come on smaller (20mm) specimens enter; they are darkish brown, with black heads, and scuttle across the floor when disturbed." The kind of nutty notes one records the morning after the night before, the entomologist eager to get out into the boiling hot yard before breakfast, and so what if he inadvertently puts wings on spiders.

Sheik Kalúla, despite what I may have implied, had started to grow on me – the typically stoical, utterly honest, pay-all-his-debts, likeable Finn. So had Anetta, who expected nothing more of me than that I was an extension of a camera, a finger on the button, during charismatic church services where I was happy to be just a cameraman to a prim young lady instead of a combined cameraman/producer/director among the bewhiskered old goats who normally accompany me on my filming excursions (they'll love that comment). To the Sheik an insect was something that caused one to scratch or might possibly, out of sheer spite of course, ram a long sting into one's posterior and "do" for one's weightlifting for an unspecified period. At times he looked more like an effeminate broad shouldered ballet dancer than a sheik, prancing this way and that as a female gangly-legged paper making wasp, or a small potter wasp busily making a nest in our electrical fittings, took a fancy to him.

One funny thing happened to me immediately after one of Anetta's videoed church services. I was standing in the yard, massaging my aching shoulder where the heavy Betacam had lain for the past hour or so, when one of the people who had emerged from the church



introduced himself and then proceeded in execrable English, accompanied by a great deal of hand clasping to the bosom, to ask me how long ago I had "taken Jesus to my heart". I replied politely that I was a non-Christian. Nonplussed, my new friend stared at me for some moments before his face cleared in comprehension. "Oh. You are Roman Catholic, then?" I was saved further embarrassment by the arrival of Anetta and the minister's son and by the sight of a lovely yellow and black citrus swallowtail as fresh as a daisy deftly weaving its way among the throng slowly spilling out of the hot church. Each to his own, say I.

There was a place south of Flic en Flac that had been christened Yemen at the end of a very minor road shooting straight across a landscape composed of sugar cane and mountain slopes clothed with scrub. Seeing the sign, Kalúla and I guffawed, while Anetta, who cringed in fear at the mere mention of the term muslim, squirmed on the rear seat. "Are you sure this is the right way?" she asked plaintively. "You've been living in England too long," I told her. "Ten yards down a cart track and you think you're lost in the wilderness! Camels and harem prospectors coming up just around the next bend." There are not many interesting side roads on Mauritius, mainly due to its size, and this one ended at what was obviously somebody's estate, but not before I had jumped out of the car several times to flail away with the net over patches of wet mud on which both of the yellows, Catopsila florella, and C. thauruma, were gathering in minor hordes to drink. I managed to catch four for identification purposes. One individual that had been run over was constantly visited by its more active fellows. Such behaviour is not unusual among pierids gathering at wet mud.

Time was running out in regard to December days and I wanted to revisit the Casela bird park, located on a partially wooded hill in our vicinity "far from the maddening crowd" of the heart of Mauritius and the hotel complexes lining the coast further north. "You're in luck, old son," beamed the attendant, "we're still letting people in on the cheap." He sold us a couple of cut price tickets. Chuckling, I pushed through the turnstile in Anetta's wake (Kalúla was busy lifting half a ton in the gym again) and we were soon admiring the Japanese koi in the deep pools sunk between some gigantic trees just beyond the bird park entrance. Mosquitoes whined and dined. Birds shrieked from large cages set on the slope of the hill higher up, and a guinea fowl cackled triumphantly like that bloke from the inland revenue when he discovers you have told a dirty joke to a rival firm and failed to pay entertainment tax on it. The first time around Casela I had taken some good shots of guinea fowl and village weavers scoffing foods in troughs, while doves looked on and



mynah birds preened their gleaming plumage, so I now had time to do some serious things. There was a stiff breeze blowing over on the southern side of the hill, which overlooked a long line of gaudy bougainvilleas, a plain decorated with pink-flowering trees, and a backdrop composed of the inevitable chain of mountains as bumpy looking as a crescent of mosquito bites on a bare arm.

On this side of the hill the gardeners had planted clumps of shrubs and flowering plants which, despite the blustery wind, were proving a haven for butterflies, among them the lovely blue Nymphalid Junonia rhadama I mentioned earlier. These resemble a giant lycaenid when in flight. Among the suppers there were also Danaus chrysippus (African monarch), the familiar large Catopsilia "yellows" (looking, as usual, incongruously white), Phalanta phalantha (a stand-in, as I remarked, for a European fritillary), and some Eurema floricola, one of the smaller black and vellow pierids, in pristine condition, scudding about among the lower vegetation in the familiar Eurema style (in Malaysia species of this genus are appropriately called grass yellows). In the annoyingly gusting breeze I stopped to stare quizzically at a playboy and, in case you think my hormones have taken a turn for the worst, I'll hasten to add that I thought he was a brown one. Steep me buttocks in bird lime! - what I mean is, there is a variety of long-tailed blue on Mauritius about which little seems to be known. Scientifically it is called Deudorix antalus and the species is found in Africa, Madagascar and on the neighbouring island of Reunion (another volcanic belch from the earth's tum). It was first noticed in Mauritius about 20 years ago. As I've said, the breeze was a right pain in the withers, making identification of anything small virtually impossible, so I must bow to common sense and suppose that the butterfly I saw sunning itself on a leaf was more likely to have been the conventional Long-tailed blue (L. boeticus) instead of the restricted, mysterious Brown playboy (D. antalus).

While Anetta responded to the call of nature and went in search of the facilities, I dumped the tripod under a large *Cassia fistula* tree which was festooned with lovely pale yellow cascades of flowers, somewhat like those on a golden chain tree, but larger and far paler. A white butterfly flitting about among the blossoms was just too much of a temptation to leave unfilmed, so I videoed it, albeit from rather a large distance away. White, white . . .? I was back to my book again and, at the risk of over-emphasising a point, I want to mention once again that the Mauritian female *C. florella* had two equally common forms, a yellow one and a white one. And her foodplant? Nice one this – it is *Cassia fistula*!



This kind of article can easily be reduced to a simple count of what we saw where. Condense an adventure into a set of hard scientific facts, though, and you rapidly come up against the problem of failing to inform people what it felt like as you vaulted a style and observed a red admiral ovipositing on a nettle, or watched an evening brown flitting on to a coconut palm as darkness descended on a tropical island - which, after all, is what makes amateur entomologising such fun. But this "broad horizon" principle has a drawback. Whatever direction one's narrative takes, a great deal inevitably had to be left out. So I'll leave a lot out. Like getting up at 5am on Christmas Eve to film the bulbuls and mynahs eating bananas in the front yard, a shower of rain, a private car (our "heap") hired just as dusk descended the same evening. Like a wild mongoose wandering about at 8am Christmas Day (25 December) morning, my trying to sleep in the downstairs bedroom with the African snails and the camera equipment, hot, hot and hot, without a fan. Like on the 27 December an evening brown butterfly flitting around our house at dusk. Like on the same day, back on the island of Isle aux Aigrettes, being shown some small black and white chafers which government conservationist Vikash Tatayah said were pests. They were around two centimetres long and rather attractive. At the reserve, I was asked by the volunteers whether I'd like to photograph the final ringing of the Mauritius kestrel young for the year, if not for several years, the population having now been pronounced out of danger. Naturally I turned down this generous offer. Oh, yeah.

In the event there was not a squeak the next day out of the mobile phone our "bungalow" agent had loaned us free of charge, so at 2pm I loaded Anetta and the filming accoutrement into the beat-up old car we had rented and drove down to the valley of the Black River Gorge area. Fired by the thrill of actually descending a volcano without getting her gym shoes scorched, Anetta was fast becoming the wildlife film maker's faithful assistant and general factotum. We arrived at the car park under the shade of large trees, the river flowing steadily past us with a gurgling sound over rocks and fallen tree trunks. An hour later we were ready to admit defeat, when abruptly there was a roaring din of a couple of motorbikes coming down the trail under the trees. The lads were a fine sight. Carrying passengers, they had been obliged to fit their heavy packs on backwards, i.e. frontwards, so that these large, bloated objects hung over the handlebars like replete leeches at a blood transfusion. They scrambled to a halt. "Coming?" "You bet!" We raced for our beat-up heap. A kilometre back down the road the kestrel ringers had removed a chain from the mouth of a rough track, up which I gunned the heap, fearful of



the bottom being wrenched out of what had once been an ordinary family's pride and joy. Having become over two decades accustomed to owning a Land-Rover, I never, even in Finland, feel comfortable on a stony surface in a low-slung, two-wheel drive mobile mattress, the modern saloon car. We lurched up the serpentine dirt road – for which read "volcanic road" – the motorcyclists ahead of us stopping periodically to obligingly kick a few extra large stones out of the way. Underneath, as the tyres fought for traction, it sounded like the changing of the guard. Anetta, to her credit, remained silent. Not her property, you see.

Rounding a bend between a hillside and yet another ravine, both clothed in shrubs and low trees, my eyes discerned that this was the last stretch beyond which we could not go without leaving the car's owner with an enormous repair bill and us with our rumps scattered among the volcanic debris on what you might jokingly call a road. Putting in a couple of metallic comments, the car slid back a few inches on the loose stones. A motorcyclist came back as I extricated the filming gear. "It's only a hundred yards or so to the rendezvous point," he announced, much to my relief. The sky above was blue and there was little sound at this altitude. We clambered up the track and then turned left before embarking on what turned out to be an agile monkey's descent of the upper part of the gorge (right up my street, if you catch my drift). From right on top the view was breathtaking, the far side scrubby, steep and shattered into fragments of rock from pieces the size of a house to shards the dimensions of a penny. Above all sat the complacent blue sky of an island in mid ocean.

Clambering over boulders and holding back branches, we rather quickly arrived at what is best described as a scenario. Beneath an overhanging cliff there was a jumble of shattered debris, sundry shrubs of the more gnarled and spiky variety, an English Channel 4 cameraman and his lady assistant whom we had met filming on Isle aux Aigrettes, a young lady volunteer (late of rear seat on motorcycle) Pavel (half Malaysian, spoke English with a London accent - which is where he was brought up), and another volunteer clad in shorts, tee shirt and a great deal of blonde hair. Standing on the slanting jumble of rocks was difficult, but I was forced to do this in order to peer up at the blondehaired volunteer, who was presently standing on a makeshift ladder peering intently into a tiny cave in the dark volcanic rock forming the side of the gorge. By twisting my neck backwards and holding my breath, I could also look up about six metres into the bright eyes of a disgruntled mother Mauritius falcon. She had a pale brown chest covered with black hearted-shaped markings, and a chestnut brown head



streaked with black. And she kept bobbing her head and piping, because she was as mad as a hatter in a world without heads. Demonstrably so, as she swept down at intervals, slashing at the heads of the would-be ringers with her sharp talons, skimming across the cliff face and then taking up her position again on the dead branch, where she chuntered away prior to planning her next onslaught on a humanity that was trying to save her and her kind from extinction. This category included innocent cameramen.

In these precarious circumstances the man from Channel 4 and I filmed one of the planet's rarest birds and the volunteers' attempt to secure its young for ringing. Unfortunately the cave went so far back into the rock that the task eventually proved impossible. As the sun began to sink lower, the attempt was abandoned; as I've said, the species has recovered sufficiently for panic measures to be suspended for an indefinite period; we had been lucky enough to witness the last attempt. There are those who may declare otherwise, but I rarely boast over a glass in a bar, mainly because (straight up, as they say in the Midlands) I rarely have the time to drink in bars. However, there is one thing of which I am extremely proud and that is, that I have been belted on the head by an extremely irascible and disgruntled Mauritian falcon, one of the world's rarest raptors, and though my sunburned scalp, in spite of my headgear, stung for several minutes afterwards . . . - I really do hate it when people fall asleep over the *Bulletin*, Wayne. Wayne . . .? Frass me, I've finally nyctitroped the editor.

Anetta left Mauritius on the last day of the year 1997, leaving the Sheik and me on New Year's Day (1998) to get down to the distant airport with Joe and Papa Doc (Henri). Here, our mountain of luggage having been bulldozed past the check-in desk, Kalúla and I walked back outside (visitors and chucker-outs are not allowed inside the airport). Saying goodbye is not something that over the years I have ever got used to, however brief the aquaintanceship, probably because I have met so many nice people on my travels. May I say (lest I die tomorrow) that I love them all. Joe glanced away as we shook hands and when he looked back his eyes were moist. Four grown men, we all suddenly found ourselves looking somewhere else, trying to appear tough. "Well. I 'ope you 'ave got some good pictures," said Joe, breaking an awkward silence. I tried to laugh. "I've still got to sell the flaming programme. Seems to me it'll be a bit like flogging a dead dodo!" With my weightlifting sheik, I turned back into the airport building, more than content to have spent part of my life on Mauritius. May no-one ever pull its plug out!



### My Collection is Greater than the Sum Total of its Butterfly Parts

When jam jar contained tiddlers and short grev trousers were all the rage there followed Great Edusa Years like vellow snow our school-field celebrated new-found colour we stood transfixed in time and then came the swarms of Painted Ladies pink and fresh from Africa (I'll go there one day to see it all) and hummed and swirled around the thistles in Berkeley Fields near the Hill of Horsa below the canal its murky waters wend their way along the banks bejewelled like fireflies in the daylight the Coppers darted fresh and sparkling this was so - the labels say.

The upheaval time had its own rewards brown jobs we were the last of the Ealing Comedy amateurs Her Majesty called who were we to resist and packed aboard the Halidale went to distant lands saw flying fish and strange grey shapes that peered up and quietly sank Mombassa's harbour bustle strange sounds and voices but even here the harbour's bushes held great orange butterflies and red ones too and more to come we knew it. "I have it here, you see, it says 'Mombassa 1955' sergeants were not amused you can imagine what they said" flamingoes always pinkly on the other side Lake Nakuru pre-pollution time the butterflies are strange the faces stranger Kikuyu, Embu, Meru, Masai, Kakamega – more are imprinted on these photopsychic wings this silkmoth by the light at Gilgil Station this stayr from Naivasha's shore.

And here comes another drawer
I hear the distant sounds of revolutionary songs
Eisenstein's Odessa
here the gentle evening hawkmoths
humming through the perfumed air
below the steps that led to chaos



a hesitating pram rolls down through the madding crowd the child oblivious to the mother's fear a passing dream the Black Sea pushes up the shore then yields and poppies on the steppes like Red Flags among the agitated crowds or Cinnabars that dot the mother fields.

Remembered Glasswings flit the misty forest in glades the Helionids wing pink-fringed transparent satyrs furtive fly the shadowed forest floor.

Atahualpa's son sacrificed to the gods arose and became a free and flowing ghost the shape a great blue flying form the spirits of the dead are assembled fly the jungle valleys to protect the living through time and space so the Maya say the morphos – prized – the living past I have one guilty specimen it takes the pride of place.

Here is boxed and bound all England's green and pleasant land - the downland blues the dotted argus fritillaries dark green from Porlock Hill - remembered is the day near Dorking glasses lost in the fumbling woods a friend a colleague says he's going down tomorrow he'll look for them some chance I said guess what he found them and an Ocracaea Chalkhill Blue and a burnet moth all spots blurred into one and yellow the rock-rose scabious thistles call me back perhaps I'll go again next year. Calligari's cabinet the Tardis the Box of Tricks itself a crafted wonder skilled hands who learned their trade carefully cutting dovetailed splendour smoothed oak and ash soft pine and elm ancient wood stains like potions gently polished drawers that move on beeswaxed runners all summer's here all Britain and foreign lands ensconced suggest tomorrow also next year next season next adventure too one day they'll discover Meadow Browns on Mars I'll have a space reserved – the bottom drawer will do.



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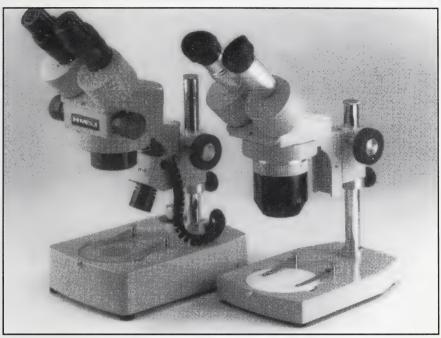
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